
Ochratoxin Health Effects

Ochratoxin is a toxic chemical produced by several different molds, including *Aspergillus ochraceus*, *Aspergillus niger*, *Aspergillus carbonarius* and *Penicillium verrucosum*. It is a common contaminant of several different foods and also has been found in the air of water-damaged buildings. A Pub Med search yields nearly 3000 articles on this toxin, including more than 700 on the negative health effects on humans, other mammals and birds.

Ochratoxin is most recognized for its strongly negative effects on the kidney in a variety of species, including humans. It is widely acknowledged as being at least in part responsible for Balkan Endemic Nephropathy and appears to be one of the main causes of Focal Segmental Glomerulosclerosis (FSGS). It also has been shown to have a negative effect on other detoxification organs, including the liver, urinary tract and bladder.

Many studies suggest that ochratoxin also is a risk factor for a variety of cancers. These include cancers of the kidney, liver, testes, urinary tract, bladder, skin and breast.

Effects on offspring are another major cause of concern. Ochratoxin is transferred to the fetus through the placenta and is excreted profusely in breast milk. It is especially associated with problems with brain development, including the cerebral cortex and hippocampus. Neural tube defects, immune system problems and eye malformations also can result.

Neurological problems also can be an effect of ochratoxin exposure in children and adults. Ochratoxin is neurotoxic, causing problems especially with the astrocytes and hippocampus, and also affects glutamate.

Ochratoxin has a variety of effects on the immune system. Components that have been shown to be affected include macrophages, neutrophils, monocytes, T-cells, lymphocytes and Natural Killer Cell activity. Chronic inflammation also is an effect, with raised IL-1 β and IL-8.

As a result of the immune system problems, pathogens are more likely to be problematic. Pathogens in animals that have been identified as proliferating as a result

of ochratoxin poisoning include *Trypanosoma brucei rhodesiense*, *Salmonella*, Coccidiosis, *Escherichia coli*, certain bacterial infections and Hepatitis.

Ochratoxin has a negative effect on the epithelium, interfering with the barrier function of the skin and causing intestinal permeability. It has been associated with skeletal abnormalities, loss of bone strength, damage to the testes and ovaries, and decreases in testosterone. The literature also suggests that it may have negative effects on the pancreas and mesenchyme functioning.

Because ochratoxin is present in animal feed, its effects have been extensively studied in the agricultural literature. Pigs and chickens are especially affected by it in terms of growth and overall health.

Ochratoxin has a wide variety of health effects because it is toxic in fundamental ways. It creates high amounts of oxidative stress and lipid peroxidation, is damaging to the mitochondria, and is genotoxic with effects on DNA.

Most of the research and discussion in the literature focuses on ochratoxin as a contaminant of food. This appears to be appropriate with regard to Balkan Endemic Nephropathy and with regard to livestock.

However, in most human populations, food consumption does not seem especially correlated with ochratoxin levels in the body. It thus seems that exposures from living or working in moldy buildings may be even more important. Inhaled exposures are especially damaging compared to ingested ones, one study suggests.

Another possibility is that in some individuals, an Aspergillosis infection is causing the toxin to be produced internally. This has yet to be explored in the literature, however.

Common foods that are frequently contaminated with ochratoxin include cereals, coffee, raisins, grape juice, wine, beer, chocolate, salami, peanuts, milk and cheese. Pig liver/kidney and licorice can be especially high in this toxin. Several spices (including ginger, nutmeg, paprika and ginseng) also can be contaminated with it.

Legal limits for ochratoxin in foods are in place in the European Union, Egypt, Bosnia, Herzegovina, Russia, China, India, Nigeria and Kenya. No specific limits are in place in the U.S., Canada, Australia, New Zealand, Japan, Mexico or South Africa.

In some categories, the legal limit in Europe is relatively low compared to the amount of toxin that frequently can be present in food. For instance, a study in France found that some samples of coffee were very close to the legal limit in terms of ochratoxin level; in countries without such standards, coffee may greatly surpass the European standard in terms of the amount of the toxin present.

As is the case with other mycotoxins, probiotic bacteria can be effective in detoxifying ochratoxin. The more intensive exposure to these sorts of bacteria seems to be the explanation for why ruminants such as cows are less affected by the toxin than other farm animals.

Binders of various sorts (such as Cholestyramine in humans and Mycotix in livestock) appear to be at least somewhat effective in helping to move the toxins through the intestinal tract and out of the body.

Supplements that have been shown to be possibly helpful in reducing the effects of ochratoxin include Vitamins C and E, lycopene, flavonoids, zinc, melatonin, Coenzyme Q10, milk thistle, cyanidin and L-phenylalanine.

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MEDIA ARTICLE:

August 12, 2013

The New Yorker

Poisoned Land: On the Trail of a Mystery Disease in the Balkans

By Elif Batuman

http://www.newyorker.com/reporting/2013/08/12/130812fa_fact_batum?mbid=social_tablet_e&pink=zcmdFe

RECENT REVIEW PAPERS (Available without charge):

Hope JH, Hope BE. A review of the diagnosis and treatment of Ochratoxin A inhalational exposure associated with human illness and kidney disease including focal segmental glomerulosclerosis. *J Environ Public Health.* 2012;2012:835059.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3255309/>

*

Kuiper-Goodman T, Hilts C, Billiard SM, Kiparissis Y, Richard ID, Hayward S. Health risk assessment of ochratoxin A for all age-sex strata in a market economy. *Food Addit Contam Part A Chem Anal Control Expo Risk Assess.* 2010 Feb;27(2):212-40.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3474135/>

*

Tozlovanu M, Pfohl-Leszkowicz A. Ochratoxin A in roasted coffee from French supermarkets and transfer in coffee beverages: comparison of analysis methods. *Toxins (Basel).* 2010 Aug;2(8):1928-42.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3153291/>

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MEDICAL LITERATURE

Review Papers

Hope Janette H., Hope Bradley E.. A review of the diagnosis and treatment of Ochratoxin A inhalational exposure associated with human illness and kidney disease including focal segmental glomerulosclerosis. Journal of environmental and public health. 2012;2012.

Khoury André, Atoui Ali. Ochratoxin a: general overview and actual molecular status. Toxins. 2010;2:461–493.

Rumora Lada, Grubisić Tihana Zanić Z.. A journey through mitogen-activated protein kinase and ochratoxin A interactions. Arhiv za higijenu rada i toksikologiju. 2009;60:449–456.

Pfohl-Leszkowicz Annie, Manderville Richard A.. Ochratoxin A: An overview on toxicity and carcinogenicity in animals and humans. Molecular nutrition & food research. 2007;51:61–99.

O'Brien Evelyn, Dietrich Daniel R.. Ochratoxin A: the continuing enigma. Critical reviews in toxicology. 2005;35:33–60.

Petzinger E., Ziegler K.. Ochratoxin A from a toxicological perspective. Journal of veterinary pharmacology and therapeutics. 2000;23:91–98.

Marquardt R. R., Frohlich A. A.. A review of recent advances in understanding ochratoxicosis. Journal of animal science. 1992;70:3968–3988.

Kuiper-Goodman T., Scott P. M.. Risk assessment of the mycotoxin ochratoxin A. Biomedical and environmental sciences : BES. 1989;2:179–248.

Massaro A., Mantovani A.. [Ochratoxin A: toxicologic problems and risks for public health]. Annali dell'Istituto superiore di sanità. 1988;24:613–620.

Effects on Kidneys

Prabu P. C., Dwivedi P., Sharma A. K.. Toxicopathological studies on the effects of aflatoxin B(1), ochratoxin A and their interaction in New Zealand White rabbits. *Experimental and toxicologic pathology.* 2013;65:277–286.

Shen Xiao Li L., Zhang Yu, Xu Wentao, et al. An iTRAQ-based mitoproteomics approach for profiling the nephrotoxicity mechanisms of ochratoxin A in HEK 293 cells. *Journal of proteomics.* 2013;78:398–415.

Stachurska Anna, Ciesla Maciej, Kozakowska Magdalena, et al. Cross-talk between microRNAs, nuclear factor E2-related factor 2, and heme oxygenase-1 in ochratoxin A-induced toxic effects in renal proximal tubular epithelial cells. *Molecular nutrition & food research.* 2013;57:504–515.

Pleardin Jelka, Perši Nina, Mitak Mario, et al. Biochemical changes in pig serum after ochratoxin A exposure. *Bulletin of environmental contamination and toxicology.* 2012;88:1043–1047.

Hmaissia Khelifa K., Ghali R., Mazigh C., Aouni Z., Machgoul S., Hedhili A.. Ochratoxin A levels in human serum and foods from nephropathy patients in Tunisia: where are you now? *Experimental and toxicologic pathology.* 2012;64:509–512.

Kumar Manoj, Dwivedi Prabhaker, Sharma Anil Kumar K., Sankar Muthu, Patil Rajendra D., Singh Nittin Dev D.. Apoptosis and lipid peroxidation in ochratoxin A- and citrinin-induced nephrotoxicity in rabbits. *Toxicology and industrial health.* 2012.

Jilani Kashif, Lupescu Adrian, Zbidah Mohanad, Abed Majed, Shaik Nazneen, Lang Florian. Enhanced apoptotic death of erythrocytes induced by the mycotoxin ochratoxin A. *Kidney & blood pressure research.* 2012;36:107–118.

Sorrenti Valeria, Di Giacomo Claudia, Acquaviva Rosaria, et al. Dimethylarginine dimethylaminohydrolase/nitric oxide synthase pathway in liver and kidney: protective effect of cyanidin 3-O- β -D-glucoside on ochratoxin-A toxicity. *Toxins.* 2012;4:353–363.

Li Zengning, Zhang Xianghong, Cui Jinfeng, Kang Weijun. Assessment on pollution of Ochratoxin A in grain in China and its apoptosis effect on vitro-cultured human tubular kidney cells. *Journal of biochemical and molecular toxicology.* 2012;26:139–146.

Hennemeier Isabell, Humpf Hans-Ulrich U., Gekle Michael, Schwerdt Gerald. The food contaminant and nephrotoxin ochratoxin A enhances Wnt1 inducible signaling protein 1 and tumor necrosis factor- α expression in human primary proximal tubule cells. *Molecular nutrition & food research.* 2012;56:1375–1384.

Stoev Stoycho D., Gundasheva Dimitrina, Zarkov Ivan, et al. Experimental mycotoxic nephropathy in pigs provoked by a mouldy diet containing ochratoxin A and fumonisin B1. *Experimental and toxicologic pathology.* 2012;64:733–741.

Klarić Maja Segvić S., Zelježić Davor, Rumora Lada, Peraica Maja, Pepelnjak Stjepan, Domijan Ana-Marija M.. A potential role of calcium in apoptosis and aberrant chromatin forms in porcine kidney PK15 cells induced by individual and combined ochratoxin A and citrinin. *Archives of toxicology.* 2012;86:97–107.

Jennings Paul, Weiland Christina, Limonciel Alice, et al. Transcriptomic alterations induced by Ochratoxin A in rat and human renal proximal tubular in vitro models and comparison to a rat in vivo model. *Archives of toxicology.* 2012;86:571–589.

Taniai Eriko, Hayashi Hitomi, Yafune Atsunori, et al. Cellular distribution of cell cycle-related molecules in the renal tubules of rats treated with renal carcinogens for 28 days: relationship between cell cycle aberration and carcinogenesis. *Archives of toxicology.* 2012;86:1453–1464.

Mally Angela. Ochratoxin a and mitotic disruption: mode of action analysis of renal tumor formation by ochratoxin A. *Toxicological sciences : an official journal of the Society of Toxicology.* 2012;127:315–330.

Radford Robert, Slattery Craig, Jennings Paul, et al. Carcinogens induce loss of the primary cilium in human renal proximal tubular epithelial cells independently of effects on the cell cycle. *American journal of physiology. Renal physiology.* 2012;302.

Jutabha Promsuk, Anzai Naohiko, Hayashi Keitaro, et al. A novel human organic anion transporter NPT4 mediates the transport of ochratoxin A. *Journal of pharmacological sciences.* 2011;116:392–396.

Zaiéd Chiraz, Bouaziz Chayma, Azizi Islam, et al. Presence of ochratoxin A in Tunisian blood nephropathy patients. Exposure level to OTA. *Experimental and toxicologic pathology.* 2011;63:613–618.

Duarte Sofia Cancela C., Pena Angelina, Lino Celeste Matos M.. Human ochratoxin a biomarkers—from exposure to effect. Critical reviews in toxicology. 2011;41:187–212.

Stachurska Anna, Kozakowska Magdalena, Jozkowicz Alicja, Dulak Jozef, Loboda Agnieszka. Aristolochic acid I and ochratoxin A differentially regulate VEGF expression in porcine kidney epithelial cells—the involvement of SP-1 and HIFs transcription factors. Toxicology letters. 2011;204:118–126.

Desalegn Biruck, Nanayakkara Shanika, Harada Kouji H., et al. Mycotoxin detection in urine samples from patients with chronic kidney disease of uncertain etiology in Sri Lanka. Bulletin of environmental contamination and toxicology. 2011;87:6–10.

Vettorazzi Ariane, Trocóniz Iñaki Fernández F., González-Peñas Elena, et al. Kidney and liver distribution of ochratoxin A in male and female F344 rats. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2011;49:1935–1942.

Milićević Dragan, Jovanović Milijan, Matekalo-Sverak Vesna, Radicević Tatjana, Petrović Milan M., Lilić Slobodan. A survey of spontaneous occurrence of ochratoxin A residues in chicken tissues and concurrence with histopathological changes in liver and kidneys. Journal of environmental science and health. Part C, Environmental carcinogenesis & ecotoxicology reviews. 2011;29:159–175.

Hibi Daisuke, Suzuki Yuta, Ishii Yuji, et al. Site-specific in vivo mutagenicity in the kidney of gpt delta rats given a carcinogenic dose of ochratoxin A. Toxicological sciences : an official journal of the Society of Toxicology. 2011;122:406–414.

Li Jinghua, Yin Shutao, Dong Yinhui, Fan Lihong, Hu Hongbo. p53 activation inhibits ochratoxin A-induced apoptosis in monkey and human kidney epithelial cells via suppression of JNK activation. Biochemical and biophysical research communications. 2011;411:458–463.

Abdu Suzan, Ali Awatif, Ansari Shatha. Cytotoxic effect of ochratoxin A on the renal corpuscles of rat kidney: could ochratoxin A cause kidney failure? Histology and histopathology. 2011;26:543–549.

Ellis James Keith K., Athersuch Toby James J., Cavill Rachel, et al. Metabolic response to low-level toxicant exposure in a novel renal tubule epithelial cell system. Molecular bioSystems. 2011;7:247–257.

Mantle Peter G., Dobrota Miloslav, Gillett Cheryl E., Odell Edward W., Pinder Sarah E.. Oncological outcomes in rats given nephrocarcinogenic exposure to dietary ochratoxin a, followed by the tumour promoter sodium barbital for life: a pilot study. *Toxins.* 2010;2:552–571.

Golli-Bennour Emna El E., Kouidhi Bochra, Bouslimi Amel, Abid-Essefi Salwa, Hassen Wafa, Bacha Hassen. Cytotoxicity and genotoxicity induced by aflatoxin B1, ochratoxin A, and their combination in cultured Vero cells. *Journal of biochemical and molecular toxicology.* 2010;24:42–50.

Hoffmann Dana, Fuchs Tobias C., Henzler Tanja, et al. Evaluation of a urinary kidney biomarker panel in rat models of acute and subchronic nephrotoxicity. *Toxicology.* 2010;277:49–58.

Mantle Peter G., Amerasinghe Cyrille, Brown Amy L., et al. A pilot study of nuclear instability in archived renal and upper urinary tract tumours with putative ochratoxin aetiology. *Toxins.* 2010;2:326–340.

Stoev S. D., Dutton M. F., Njobeh P. B., Mosonik J. S., Steenkamp P. A.. Mycotoxic nephropathy in Bulgarian pigs and chickens: complex aetiology and similarity to Balkan endemic nephropathy. *Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment.* 2010;27:72–88.

Mantle Peter G., McHugh Katharine M., Fincham John E.. Contrasting nephropathic responses to oral administration of extract of cultured *Penicillium polonicum* in rat and primate. *Toxins.* 2010;2:2083–2097.

Anzai Naohiko, Jutabha Promsuk, Endou Hitoshi. Molecular mechanism of ochratoxin a transport in the kidney. *Toxins.* 2010;2:1381–1398.

Mantle Peter G., Nolan Christopher C.. Pathological outcomes in kidney and brain in male Fischer rats given dietary ochratoxin A, commencing at one year of age. *Toxins.* 2010;2:1100–1110.

Mantle Peter, Kulinskaya Elena. Lifetime, low-dose ochratoxin A dietary study on renal carcinogenesis in male Fischer rats. *Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment.* 2010;27:1566–1573.

Aoudia N., Callu P., Grosjean F., Larondelle Y.. Effectiveness of mycotoxin sequestration activity of micronized wheat fibres on distribution of ochratoxin A in plasma, liver and kidney of piglets fed a naturally contaminated diet. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 2009;47:1485–1489.

Schwerdt Gerald, Holzinger Hildegard, Königs Maika, Humpf Hans-Ulrich U., Gekle Michael. Effect of ochratoxin A on cell survival and collagen homeostasis in human mesangial cells in primary culture. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 2009;47:209–213.

Domijan Ana-Marija M., Peraica Maja, Markov Ksenija, Fuchs Radovan. Urine ochratoxin a and sphinganine/sphingosine ratio in residents of the endemic nephropathy area in Croatia. *Arhiv za higijenu rada i toksikologiju.* 2009;60:387–393.

Pfohl-Leszkowicz Annie. Ochratoxin A and aristolochic acid involvement in nephropathies and associated urothelial tract tumours. *Arhiv za higijenu rada i toksikologiju.* 2009;60:465–483.

Boesch-Saadatmandi C., Wagner A. E., Graeser A. C., Hundhausen C., Wolffram S., Rimbach G.. Ochratoxin A impairs Nrf2-dependent gene expression in porcine kidney tubulus cells. *Journal of animal physiology and animal nutrition.* 2009;93:547–554.

Zlender Vilim, Brelijak Davorka, Ljubojević Marija, et al. Low doses of ochratoxin A upregulate the protein expression of organic anion transporters Oat1, Oat2, Oat3 and Oat5 in rat kidney cortex. *Toxicology and applied pharmacology.* 2009;239:284–296.

Mantle Peter G.. Minimum tolerable exposure period and maximum threshold dietary intake of ochratoxin A for causing renal cancer in male Dark Agouti rats. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 2009;47:2419–2424.

Stemmer Kerstin, Ellinger-Ziegelbauer Heidrun, Ahr Hans-Jürgen J., Dietrich Daniel R.. Molecular characterization of preneoplastic lesions provides insight on the development of renal tumors. *The American journal of pathology.* 2009;175:1686–1698.

Bouslimi Amel, Bouaziz Chayma, Ayed-Boussema Imen, Hassen Wafa, Bacha Hassen. Individual and combined effects of ochratoxin A and citrinin on viability and DNA

fragmentation in cultured Vero cells and on chromosome aberrations in mice bone marrow cells. *Toxicology*. 2008;251:1–7.

Peraica Maja, Domijan Ana-Marija M., Sarić Marko. Mycotoxic and aristolochic acid theories of the development of endemic nephropathy. *Arhiv za higijenu rada i toksikologiju*. 2008;59:59–65.

Yokoyama Hirokazu, Anzai Naohiko, Ljubojevic Marija, et al. Functional and immunochemical characterization of a novel organic anion transporter Oat8 (Slc22a9) in rat renal collecting duct. *Cellular physiology and biochemistry : international journal of experimental cellular physiology, biochemistry, and pharmacology*. 2008;21:269–278.

Milićević Dragan, Jurić Verica, Stefanović Srđan, Jovanović Milijan, Janković Sasa. Survey of slaughtered pigs for occurrence of ochratoxin A and porcine nephropathy in Serbia. *International journal of molecular sciences*. 2008;9:2169–2183.

Mantle Peter G., Nagy Judit M.. Binding of ochratoxin A to a urinary globulin: a new concept to account for gender difference in rat nephrocarcinogenic responses. *International journal of molecular sciences*. 2008;9:719–735.

Bouslimi Amel, Ouannes Zouhour, Golli Emna El E., Bouaziz Chayma, Hassen Wafa, Bacha Hassen. Cytotoxicity and oxidative damage in kidney cells exposed to the mycotoxins ochratoxin a and citrinin: individual and combined effects. *Toxicology mechanisms and methods*. 2008;18:341–349.

Peraica Maja, Domijan Ana-Marija M., Miletic-Medved Marica, Fuchs Radovan. The involvement of mycotoxins in the development of endemic nephropathy. *Wiener klinische Wochenschrift*. 2008;120:402–407.

Hmaissia Khelifa K., Ghali R., Mezigh C., et al. Serum levels of ochratoxin A in healthy subjects and in nephropathic patients in Tunisia. *Annales de biologie clinique*. 2008;66:631–636.

Rached Eva, Hoffmann Dana, Blumbach Kai, Weber Klaus, Dekant Wolfgang, Mally Angela. Evaluation of putative biomarkers of nephrotoxicity after exposure to ochratoxin a in vivo and in vitro. *Toxicological sciences : an official journal of the Society of Toxicology*. 2008;103:371–381.

Arbillaga Leire, Vettorazzi Ariane, Gil Ana G., Delft Joost Hm H., García-Jalón José Antonio A., Cerain Adela. Gene expression changes induced by ochratoxin A in renal and hepatic tissues of male F344 rat after oral repeated administration. *Toxicology and applied pharmacology*. 2008;230:197–207.

Boesch-Saadatmandi C., Loboda A., Jozkowicz A., et al. Effect of ochratoxin A on redox-regulated transcription factors, antioxidant enzymes and glutathione-S-transferase in cultured kidney tubulus cells. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2008;46:2665–2671.

Wanigasuriya Kamani P., Peiris Hemantha, Ileperuma Nalaka, Peiris-John Roshini J., Wickremasinghe Rajitha. Could ochratoxin A in food commodities be the cause of chronic kidney disease in Sri Lanka? *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 2008;102:726–728.

Karmaus Wilfried, Dimitrov Plamen, Simeonov Valeri, Tsolova Svetla, Bonev Angel, Georgieva Rossitza. Metals and kidney markers in adult offspring of endemic nephropathy patients and controls: a two-year follow-up study. *Environmental health : a global access science source*. 2008;7.

Verma Ramtej, Chakraborty Devjani. Alterations in DNA, RNA and protein contents in liver and kidney of mice treated with ochratoxin and their amelioration by *Emblica officinalis* aqueous extract. *Acta poloniae pharmaceutica*. 2008;65:3–9.

Delatour Thierry, Mally Angela, Richoz Janique, et al. Absence of 2'-deoxyguanosine-carbon 8-bound ochratoxin A adduct in rat kidney DNA monitored by isotope dilution LC-MS/MS. *Molecular nutrition & food research*. 2008;52:472–482.

Schmidt-Heydt M., Geisen R.. Gene expression as an indication for ochratoxin A biosynthesis in *Penicillium nordicum*. *Mycotoxin research*. 2007;23:13–21.

Rached Eva, Hard Gordon C., Blumbach Kai, et al. Ochratoxin A: 13-week oral toxicity and cell proliferation in male F344/n rats. *Toxicological sciences : an official journal of the Society of Toxicology*. 2007;97:288–298.

Mally A., Hard G. C., Dekant W.. Ochratoxin A as a potential etiologic factor in endemic nephropathy: lessons from toxicity studies in rats. *Food and chemical toxicology : an*

international journal published for the British Industrial Biological Research Association. 2007;45:2254–2260.

Stemmer Kerstin, Ellinger-Ziegelbauer Heidrun, Ahr Hans-Juergen J., Dietrich Daniel R.. Carcinogen-specific gene expression profiles in short-term treated Eker and wild-type rats indicative of pathways involved in renal tumorigenesis. *Cancer research*. 2007;67:4052–4068.

Brown Amy L., Odell Edward W., Mantle Peter G.. DNA ploidy distribution in renal tumours induced in male rats by dietary ochratoxin A. Experimental and toxicologic pathology. 2007;59:85–95.

Schwerdt Gerald, Holzinger Hildegard, Sauvant Christoph, Königs Maika, Humpf Hans-Ulrich U., Gekle Michael. Long-term effects of ochratoxin A on fibrosis and cell death in human proximal tubule or fibroblast cells in primary culture. *Toxicology*. 2007;232:57–67.

Pfohl-Leszkowicz Annie, Tozlovanu Mariana, Manderville Richard, Peraica Maja, Castegnaro Marcel, Stefanovic Vladislav. New molecular and field evidences for the implication of mycotoxins but not aristolochic acid in human nephropathy and urinary tract tumor. *Molecular nutrition & food research*. 2007;51:1131–1146.

Kumar Manoj, Dwivedi Prabhaker, Sharma Anil K., Singh Nittin Dev D., Patil Rajendra D.. Ochratoxin A and citrinin nephrotoxicity in New Zealand White rabbits: an ultrastructural assessment. *Mycopathologia*. 2007;163:21–30.

Dinis A. M., Lino C. M., Pena A. S.. Ochratoxin A in nephropathic patients from two cities of central zone in Portugal. *Journal of pharmaceutical and biomedical analysis*. 2007;44:553–557.

Grajewski J., Jarzemski P., Twaruzek M., Kuzminska K., Trepala M.. The level of ochratoxin a in patients after nephrectomy. *Mycotoxin research*. 2007;23:22–26.

Arbillaga Leire, Azqueta Amaia, Ezpeleta Olga, Cerain Adela. Oxidative DNA damage induced by Ochratoxin A in the HK-2 human kidney cell line: evidence of the relationship with cytotoxicity. *Mutagenesis*. 2007;22:35–42.

Marin-Kuan M., Nestler S., Verguet C., et al. MAPK-ERK activation in kidney of male rats chronically fed ochratoxin A at a dose causing a significant incidence of renal carcinoma. *Toxicology and applied pharmacology*. 2007;224:174–181.

Costa S., Utan A., Cervellati R., Speroni E., Guerra M. C.. Catechins: natural free-radical scavengers against ochratoxin A-induced cell damage in a pig kidney cell line (LLC-PK1). *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2007;45:1910–1917.

Klarić Maja Segvić S., Pepeljnjak Stjepan, Domijan Ana-Marija M., Petrik József. Lipid peroxidation and glutathione levels in porcine kidney PK15 cells after individual and combined treatment with fumonisin B(1), beauvericin and ochratoxin A. *Basic & clinical pharmacology & toxicology*. 2007;100:157–164.

Heussner A. H., O'Brien E., Dietrich D. R.. Effects of repeated ochratoxin exposure on renal cells in vitro. *Toxicology in vitro : an international journal published in association with BIBRA*. 2007;21:72–80.

Rached Eva, Pfeiffer Erika, Dekant Wolfgang, Mally Angela. Ochratoxin A: apoptosis and aberrant exit from mitosis due to perturbation of microtubule dynamics? *Toxicological sciences : an official journal of the Society of Toxicology*. 2006;92:78–86.

Gresham A., Done S., Livesey C., et al. Survey of pigs' kidneys with lesions consistent with PMWS and PDNS and ochratoxicosis. Part 2: pathological and histological findings. *The Veterinary record*. 2006;159:761–768.

Domijan Ana-Marija M., Zelježić Davor, Kopjar Nevenka, Peraica Maja. Standard and Fpg-modified comet assay in kidney cells of ochratoxin A- and fumonisin B(1)-treated rats. *Toxicology*. 2006;222:53–59.

Faucet-Marquis Virginie, Pont Frédéric, Størmer Frederik C., Rizk Toufik, Castegnaro Marcel, Pfohl-Leszkowicz Annie. Evidence of a new dechlorinated ochratoxin A derivative formed in opossum kidney cell cultures after pretreatment by modulators of glutathione pathways: correlation with DNA-adduct formation. *Molecular nutrition & food research*. 2006;50:530–542.

Gresham A., Done S., Livesey C., et al. Survey of pigs' kidneys with lesions consistent with PMWS and PDNS and ochratoxicosis. Part 1: concentrations and prevalence of ochratoxin A. *The Veterinary record*. 2006;159:737–742.

Zeljezić D., Domijan A-M M., Peraica M.. DNA damage by ochratoxin A in rat kidney assessed by the alkaline comet assay. Brazilian journal of medical and biological research = Revista brasileira de pesquisas médicas e biológicas / Sociedade Brasileira de Biofísica ... [et al.]. 2006;39:1563–1568.

Mally Angela, Decker Martina, Bekteshi Michaela, Dekant Wolfgang. Ochratoxin A alters cell adhesion and gap junction intercellular communication in MDCK cells. Toxicology. 2006;223:15–25.

Bow Daniel A., Perry Jennifer L., Simon John D., Pritchard John B.. The impact of plasma protein binding on the renal transport of organic anions. The Journal of pharmacology and experimental therapeutics. 2006;316:349–355.

Heussner A. H., Dietrich D. R., O'Brien E.. In vitro investigation of individual and combined cytotoxic effects of ochratoxin A and other selected mycotoxins on renal cells. Toxicology in vitro : an international journal published in association with BIBRA. 2006;20:332–341.

Mally Angela, Keim-Heusler Heike, Amberg Alexander, et al. Biotransformation and nephrotoxicity of ochratoxin B in rats. Toxicology and applied pharmacology. 2005;206:43–53.

Fuchs R., Peraica M.. Ochratoxin A in human kidney diseases. Food additives and contaminants. 2005;22 Suppl 1:53–57.

Domijan Ana-Marija M., Rudes Kamilo, Peraica Maja. The effect of ochratoxin A on the concentration of protein carbonyls in rats. Arhiv za higijenu rada i toksikologiju. 2005;56:311–315.

Mally Angela, Völkel Wolfgang, Amberg Alexander, et al. Functional, biochemical, and pathological effects of repeated oral administration of ochratoxin A to rats. Chemical research in toxicology. 2005;18:1242–1252.

Knecht A., Schwerdt G., Gekle M., Humpf H-U U.. Combinatory effects of citrinin and ochratoxin A in immortalized human proximal tubule cells. Mycotoxin research. 2005;21:176–181.

Kamp Hennicke G., Eisenbrand Gerhard, Janzowski Christine, et al. Ochratoxin A induces oxidative DNA damage in liver and kidney after oral dosing to rats. *Molecular nutrition & food research.* 2005;49:1160–1167.

Sauvant C., Holzinger H., Gekle M.. Proximal tubular toxicity of ochratoxin A is amplified by simultaneous inhibition of the extracellular signal-regulated kinases 1/2. *The Journal of pharmacology and experimental therapeutics.* 2005;313:234–241.

Gagliano Nicoletta, Torri Carlo, Donetti Elena, et al. Ochratoxin A-induced renal cortex fibrosis and epithelial-to-mesenchymal transition: molecular mechanisms of ochratoxin A-injury and potential effects of red wine. *Molecular medicine (Cambridge, Mass.).* 2005;11:30–38.

Mantle Peter, Kulinskaya Elena, Nestler Sandra. Renal tumourigenesis in male rats in response to chronic dietary ochratoxin A. *Food additives and contaminants.* 2005;22 Suppl 1:58–64.

Kwak Jin-Oh O., Kim Hyun-Woo W., Oh Kwang-Jin J., Ko Chang-Bo B., Park Hwayong, Cha Seok Ho H.. Characterization of mouse organic anion transporter 5 as a renal steroid sulfate transporter. *The Journal of steroid biochemistry and molecular biology.* 2005;97:369–375.

Anzai Naohiko, Jutabha Promsuk, Enomoto Atsushi, et al. Functional characterization of rat organic anion transporter 5 (Slc22a19) at the apical membrane of renal proximal tubules. *The Journal of pharmacology and experimental therapeutics.* 2005;315:534–544.

Sauvant Christoph, Holzinger Hildegard, Gekle Michael. The nephrotoxin ochratoxin A induces key parameters of chronic interstitial nephropathy in renal proximal tubular cells. *Cellular physiology and biochemistry : international journal of experimental cellular physiology, biochemistry, and pharmacology.* 2005;15:125–134.

Blazer-Yost Bonnie L., West T. Aaron, Stack Jamie, Peck Kerrie, Lahr Thomas F., Gekle Michael. Effect of the mycotoxin, ochratoxin A, on hormone-stimulated ion transport in a cultured cell model of the renal principal cell. *Pflügers Archiv : European journal of physiology.* 2005;450:53–60.

Sauvant Christoph, Holzinger Hildegarde, Mildenberger Sigrid, Gekle Michael. Exposure to nephrotoxic ochratoxin A enhances collagen secretion in human renal proximal tubular cells. *Molecular nutrition & food research.* 2005;49:31–37.

Domijan Ana-Marija M., Peraica Maja, Ferencic Zeljko, et al. Ochratoxin A-induced apoptosis in rat kidney tissue. *Arhiv za higijenu rada i toksikologiju.* 2004;55:243–248.

Hassen Wafa, Abid Salwa, Achour Abdellatif, Creppy Edmond, Bacha Hassen. Ochratoxin A and beta2-microglobulinuria in healthy individuals and in chronic interstitial nephropathy patients in the centre of Tunisia: a hot spot of Ochratoxin A exposure. *Toxicology.* 2004;199:185–193.

Robbiano Luigi, Baroni Debora, Carrozzino Roberto, Mereto Eugenio, Brambilla Giovanni. DNA damage and micronuclei induced in rat and human kidney cells by six chemicals carcinogenic to the rat kidney. *Toxicology.* 2004;204:187–195.

Hassen Wafa, Abid-Essafi Salwa, Achour Abdellatif, et al. Karyomegaly of tubular kidney cells in human chronic interstitial nephropathy in Tunisia: respective role of Ochratoxin A and possible genetic predisposition. *Human & experimental toxicology.* 2004;23:339–346.

Hsieh Ming-Fang F., Chiu Hsiao-Ying Y., Lin-Tan Dan-Tzu T., Lin Ja-Liang L.. Does human ochratoxin A aggravate proteinuria in patients with chronic renal disease? *Renal failure.* 2004;26:311–316.

Blank Ralf, Wolffram Siegfried. Alkalization of urinary pH accelerates renal excretion of ochratoxin A in pigs. *The Journal of nutrition.* 2004;134:2355–2358.

Zhang Xiaohong, Groves Carlotta E., Bahn Andrew, et al. Relative contribution of OAT and OCT transporters to organic electrolyte transport in rabbit proximal tubule. *American journal of physiology. Renal physiology.* 2004;287.

Lock Edward A., Hard Gordon C.. Chemically induced renal tubule tumors in the laboratory rat and mouse: review of the NCI/NTP database and categorization of renal carcinogens based on mechanistic information. *Critical reviews in toxicology.* 2004;34:211–299.

Youngblood Geri L., Sweet Douglas H.. Identification and functional assessment of the novel murine organic anion transporter Oat5 (Slc22a19) expressed in kidney. American journal of physiology. Renal physiology. 2004;287.

Gennari Alessandra, Pazos Patricia, Boveri Monica, et al. New insights into the mechanisms involved in renal proximal tubular damage induced in vitro by ochratoxin A. Journal of biochemical and molecular toxicology. 2004;18:43–49.

Schwerdt Gerald, Freudinger Ruth, Schuster Claudia, Silbernagl Stefan, Gekle Michael. Inhibition of mitochondria and extracellular acidification enhance ochratoxin A-induced apoptosis in renal collecting duct-derived MDCK-C7 cells. Cellular physiology and biochemistry : international journal of experimental cellular physiology, biochemistry, and pharmacology. 2004;14:47–56.

Aukema H. M., House J. D., Bankovic-Calic N., Ogborn M. R.. Increased renal fibrosis and expression of renal phosphatidylinositol 4-kinase-beta and phospholipase C (gamma1) proteins in piglets exposed to ochratoxin-A. Nephron. Physiology. 2004;96.

Froquet R., Le Dréan G., Parent-Massin D.. Effect of Ochratoxin A on human haematopoietic progenitors proliferation and differentiation: an in vitro study. Human & experimental toxicology. 2003;22:393–400.

Miljkovic Ana, Pfohl-Leszkowicz Annie, Dobrota Miloslav, Mantle Peter G.. Comparative responses to mode of oral administration and dose of ochratoxin A or nephrotoxic extract of *Penicillium polonicum* in rats. Experimental and toxicologic pathology. 2003;54:305–312.

Weber F., Schwerdt G., Freudinger R., Gekle M.. Programmed cell death by interaction of ochratoxin A with other nephrotoxins. Mycotoxin research. 2003;19:20–23.

Abid Salwa, Hassen Wafa, Achour Abdellatif, et al. Ochratoxin A and human chronic nephropathy in Tunisia: is the situation endemic? Human & experimental toxicology. 2003;22:77–84.

Schwerdt Gerald, Freudinger Ruth, Schuster Claudia, Silbernagl Stefan, Gekle Michael. Inhibition of mitochondria prevents cell death in kidney epithelial cells by intra- and extracellular acidification. Kidney international. 2003;63:1725–1735.

Petrik József, Zanić-Grubisić Tihana, Barisić Karmela, et al. Apoptosis and oxidative stress induced by ochratoxin A in rat kidney. *Archives of toxicology*. 2003;77:685–693.

Luhe Anke, Hildebrand Heinz, Bach Ute, Dingermann Theodor, Ahr Hans-Jurgen J.. A new approach to studying ochratoxin A (OTA)-induced nephrotoxicity: expression profiling in vivo and in vitro employing cDNA microarrays. *Toxicological sciences : an official journal of the Society of Toxicology*. 2003;73:315–328.

Müller G., Burkert B., Rosner H., Köhler H.. Effects of the mycotoxin ochratoxin A and some of its metabolites on human kidney cell lines. *Toxicology in vitro : an international journal published in association with BIBRA*. 2003;17:441–448.

Sauvant C., Holzinger H., Gekle M.. Inhibition of the mitogen activated protein kinase ERK1/2 amplifies ochratoxin A toxicity in the proximal tubule of the kidney. *Mycotoxin research*. 2003;19:118–123.

Son Woo-Chan C., Kamino Kenji, Lee Yong-Soon S., Kang Kyung-Sun S.. Lack of effects of sodium 2-mercaptoethane sulfonate (mesna) on Ochratoxin A induced renal tumorigenicity following life-time oral administration of Ochratoxin A in DA and Lewis rats. *Toxicology letters*. 2003;142:19–27.

Aydin G., Ozçelik N., Ciçek E., Soyöz M.. Histopathologic changes in liver and renal tissues induced by Ochratoxin A and melatonin in rats. *Human & experimental toxicology*. 2003;22:383–391.

Schaaf G. J., Nijmeijer S. M., Maas R. F., Roestenberg P., Groene E. M., Fink-Gremmels J.. The role of oxidative stress in the ochratoxin A-mediated toxicity in proximal tubular cells. *Biochimica et biophysica acta*. 2002;1588:149–158.

Stoev Stoycho D., Daskalov Hristo, Radic Bozica, Domijan Ana-Marija M., Peraica Maja. Spontaneous mycotoxic nephropathy in Bulgarian chickens with unclarified mycotoxin aetiology. *Veterinary research*. 2002;33:83–93.

Lee Woon Kyu K., Jang Sae-Byeol B., Cha Seok Ho H., et al. Different sensitivity to nephrotoxic agents and osmotic stress in proximal tubular and collecting duct cell lines derived from transgenic mice. *Toxicology in vitro : an international journal published in association with BIBRA*. 2002;16:55–62.

Barisić Karmela, Petrik Jozsef, Rumora Lada, Cepelak Ivana, Grubisić Tihana Zanić Z.. Expression of Hsp70 in kidney cells exposed to ochratoxin A. Archives of toxicology. 2002;76:218–226.

Kobayashi Yasuna, Ohshiro Naomi, Shibusawa Akiko, et al. Isolation, characterization and differential gene expression of multispecific organic anion transporter 2 in mice. Molecular pharmacology. 2002;62:7–14.

Heussner Alexandra H., O'Brien Evelyn, Dietrich Daniel R.. Species- and sex-specific variations in binding of ochratoxin A by renal proteins in vitro. Experimental and toxicologic pathology. 2002;54:151–159.

Horvath Anelia, Upham Brad L., Ganev Varban, Trosko James E.. Determination of the epigenetic effects of ochratoxin in a human kidney and a rat liver epithelial cell line. Toxicology. 2002;40:273–282.

Stoev S. D., Vitanov S., Anguelov G., Petkova-Bocharova T., Creppy E. E.. Experimental mycotoxic nephropathy in pigs provoked by a diet containing ochratoxin A and penicillic acid. Veterinary research communications. 2001;25:205–223.

Dietrich D. R., O'Brien E., Stack M. E., Heussner A. H.. Species- and sex-specific renal cytotoxicity of ochratoxin A and B in vitro. Experimental and toxicologic pathology. 2001;53:215–225.

Benesic A., Mildenberger S., Gekle M.. Nephritogenic ochratoxin A interferes with hormonal signalling in immortalized human kidney epithelial cells. Pflügers Archiv : European journal of physiology. 2000;439:278–287.

Eder S., Benesic A., Freudinger R., et al. Nephritogenic ochratoxin A interferes with mitochondrial function and pH homeostasis in immortalized human kidney epithelial cells. Pflügers Archiv : European journal of physiology. 2000;440:521–529.

Föllmann W., Lebrun S., Kullik B., Koch M., Römer H. C., Golka K.. Cytotoxicity of ochratoxin A and citrinin in different cell types in vitro. Mycotoxin research. 2000;16 Suppl 1:123–126.

Schwerdt G., Freudinger R., Schuster C., Silbernagl S., Gekle M.. Apoptosis in cultured renal epithelial cells caused by ochratoxin A. Mycotoxin research. 2000;16 Suppl 2:154–157.

Tsuda M., Sekine T., Takeda M., et al. Transport of ochratoxin A by renal multispecific organic anion transporter 1. *The Journal of pharmacology and experimental therapeutics.* 1999;289:1301–1305.

Schwerdt G., Freudinger R., Mildenberger S., Silbernagl S., Gekle M.. The nephrotoxin ochratoxin A induces apoptosis in cultured human proximal tubule cells. *Cell biology and toxicology.* 1999;15:405–415.

Schwerdt G., Freudinger R., Silbernagl S., Gekle M.. Ochratoxin A-binding proteins in rat organs and plasma and in different cell lines of the kidney. *Toxicology.* 1999;135:1–10.

Rásónyi T., Schlatter J., Dietrich D. R.. The role of alpha2u-globulin in ochratoxin A induced renal toxicity and tumors in F344 rats. *Toxicology letters.* 1999;104:83–92.

Obrecht-Pflumio S., Chassat T., Dirheimer G., Marzin D.. Genotoxicity of ochratoxin A by Salmonella mutagenicity test after bioactivation by mouse kidney microsomes. *Mutation research.* 1999;446:95–102.

Maaroufi K., Zakhama A., Baudrimont I., et al. Karyomegaly of tubular cells as early stage marker of the nephrotoxicity induced by ochratoxin A in rats. *Human & experimental toxicology.* 1999;18:410–415.

Groves C. E., Nowak G., Morales M.. Ochratoxin A secretion in primary cultures of rabbit renal proximal tubule cells. *Journal of the American Society of Nephrology : JASN.* 1999;10:13–20.

Dahlmann A., Dantzler W. H., Silbernagl S., Gekle M.. Detailed mapping of ochratoxin A reabsorption along the rat nephron *in vivo:* the nephrotoxin can be reabsorbed in all nephron segments by different mechanisms. *The Journal of pharmacology and experimental therapeutics.* 1998;286:157–162.

Stoev S. D., Hald B., Mantle P. G.. Porcine nephropathy in Bulgaria: a progressive syndrome of complex or uncertain (mycotoxin) aetiology. *The Veterinary record.* 1998;142:190–194.

Wafa E. W., Yahya R. S., Sobh M. A., et al. Human ochratoxicosis and nephropathy in Egypt: a preliminary study. *Human & experimental toxicology.* 1998;17:124–129.

Kerkadi A., Barriault C., Tuchweber B., et al. Dietary cholestyramine reduces ochratoxin A-induced nephrotoxicity in the rat by decreasing plasma levels and enhancing fecal excretion of the toxin. *Journal of toxicology and environmental health. Part A.* 1998;53:231–250.

Gekle M., Gassner B., Freudinger R., et al. Characterization of an ochratoxin-A-dedifferentiated and cloned renal epithelial cell line. *Toxicology and applied pharmacology.* 1998;152:282–291.

Bondy G. S., Armstrong C. L.. Cytotoxicity of nephrotoxic fungal toxins to kidney-derived LLC-PK1 and OK cell lines. *Cell biology and toxicology.* 1998;14:323–332.

Welborn J. R., Groves C. E., Wright S. H.. Peritubular transport of ochratoxin A by single rabbit renal proximal tubules. *Journal of the American Society of Nephrology : JASN.* 1998;9:1973–1982.

Groves C. E., Morales M., Wright S. H.. Peritubular transport of ochratoxin A in rabbit renal proximal tubules. *The Journal of pharmacology and experimental therapeutics.* 1998;284:943–948.

Castegnaro M., Mohr U., Pfohl-Leszkowicz A., et al. Sex- and strain-specific induction of renal tumors by ochratoxin A in rats correlates with DNA adduction. *International journal of cancer. Journal international du cancer.* 1998;77:70–75.

Sauvant C., Silbernagl S., Gekle M.. Exposure to ochratoxin A impairs organic anion transport in proximal-tubule-derived opossum kidney cells. *The Journal of pharmacology and experimental therapeutics.* 1998;287:13–20.

Fillastre J. P.. [Experimental and human nephrotoxicity induced by ochratoxins]. *Bulletin de l'Académie nationale de médecine.* 1997;181.

Zingerle M., Silbernagl S., Gekle M.. Reabsorption of the nephrotoxin ochratoxin A along the rat nephron in vivo. *The Journal of pharmacology and experimental therapeutics.* 1997;280:220–224.

Kuramochi G., Gekle M., Silbernagl S.. Ochratoxin A disturbs pH homeostasis in the kidney: increases in pH and HCO₃⁻ in the tubules and vasa recta. *Pflügers Archiv : European journal of physiology.* 1997;434:392–397.

Kuramochi G., Gekle M., Silbernagl S.. Derangement of pH homeostasis in the renal papilla: ochratoxin A increases pH in vasa recta blood. *Nephron*. 1997;76:472–476.

Schramek H., Wilflingseder D., Pollack V., Freudinger R., Mildenberger S., Gekle M.. Ochratoxin A-induced stimulation of extracellular signal-regulated kinases 1/2 is associated with Madin-Darby canine kidney-C7 cell dedifferentiation. *The Journal of pharmacology and experimental therapeutics*. 1997;283:1460–1468.

Bahnemann E., Kerling H. P., Ensminger S., Schwerdt G., Silbernagl S., Gekle M.. Renal transepithelial secretion of ochratoxin A in the non-filtering toad kidney. *Toxicology*. 1997;120:11–17.

Størmer F. C., Høiby E. A.. Citrinin, ochratoxin A and iron. Possible implications for their biological function and induction of nephropathy. *Mycopathologia*. 1996;134:103–107.

Plestina R.. Nephrotoxicity of ochratoxin A. *Food additives and contaminants*. 1996;13 Suppl:49–50.

Gekle M., Silbernagl S.. Renal toxicodynamics of ochratoxin A: a pathophysiological approach. *Kidney & blood pressure research*. 1996;19:225–235.

Schwerdt G., Bauer K., Gekle M., Silbernagl S.. Accumulation of ochratoxin A in rat kidney in vivo and in cultivated renal epithelial cells in vitro. *Toxicology*. 1996;114:177–185.

Grosse Y., Baudrimont I., Castegnaro M., et al. Formation of ochratoxin A metabolites and DNA-adducts in monkey kidney cells. *Chemico-biological interactions*. 1995;95:175–187.

Gekle M., Pollock C. A., Silbernagl S.. Time- and concentration-dependent biphasic effect of ochratoxin A on growth of proximal tubular cells in primary culture. *The Journal of pharmacology and experimental therapeutics*. 1995;275:397–404.

Maaroufi K., Achour A., Betbeder A. M., et al. Foodstuffs and human blood contamination by the mycotoxin ochratoxin A: correlation with chronic interstitial nephropathy in Tunisia. *Archives of toxicology*. 1995;69:552–558.

Maaroufi K., Achour A., Hammami M., et al. Ochratoxin A in human blood in relation to nephropathy in Tunisia. *Human & experimental toxicology*. 1995;14:609–614.

Seegers J. C., Böhmer L. H., Kruger M. C., Lottering M. L., Kock M.. A comparative study of ochratoxin A-induced apoptosis in hamster kidney and HeLa cells. *Toxicology and applied pharmacology*. 1994;129:1–11.

Braunberg R. C., Barton C. N., Gantt O. O., Friedman L.. Interaction of citrinin and ochratoxin A. *Natural toxins*. 1994;2:124–131.

Breitholtz-Emanuelsson A., Minervini F., Hult K., Visconti A.. Ochratoxin A in human serum samples collected in southern Italy from healthy individuals and individuals suffering from different kidney disorders. *Natural toxins*. 1994;2:366–370.

Gekle M., Mildenberger S., Freudinger R., Silbernagl S.. The mycotoxin ochratoxin-A impairs protein uptake in cells derived from the proximal tubule of the kidney (opossum kidney cells). *The Journal of pharmacology and experimental therapeutics*. 1994;271:1–6.

Gekle M., Vogt R., Oberleithner H., Silbernagl S.. The mycotoxin ochratoxin A deranges pH homeostasis in Madin-Darby canine kidney cells. *The Journal of membrane biology*. 1994;139:183–190.

Gekle M., Silbernagl S.. The role of the proximal tubule in ochratoxin A nephrotoxicity in vivo: toxodynamic and toxokinetic aspects. *Renal physiology and biochemistry*. 1994;17:40–49.

Maaroufi K., Pfohl-Leszkowicz A., Achour A., et al. [Ochratoxin A genotoxicity, relation to renal tumors]. *Archives de l’Institut Pasteur de Tunis*. 1994;71:21–31.

Di Paolo N., Guarnieri A., Garosi G., Sacchi G., Mangiarotti A. M., Di Paolo M.. Inhaled mycotoxins lead to acute renal failure. *Nephrology, dialysis, transplantation*. 1994;9 Suppl 4:116–120.

Gekle M., Oberleithner H., Silbernagl S.. Ochratoxin A impairs "postproximal" nephron function in vivo and blocks plasma membrane anion conductance in Madin-Darby canine kidney cells in vitro. *Pflügers Archiv : European journal of physiology*. 1993;425:401–408.

Gekle M., Silbernagl S.. Mechanism of ochratoxin A-induced reduction of glomerular filtration rate in rats. *The Journal of pharmacology and experimental therapeutics.* 1993;267:316–321.

Kitabatake N., Doi E., Trivedi A. B.. Toxicity evaluation of the mycotoxins, citrinin and ochratoxin A, using several animal cell lines. *Comparative biochemistry and physiology. C, Comparative pharmacology and toxicology.* 1993;105:429–433.

Rodeheaver D. P., Schnellmann R. G.. Extracellular acidosis ameliorates metabolic-inhibitor-induced and potentiates oxidant-induced cell death in renal proximal tubules. *The Journal of pharmacology and experimental therapeutics.* 1993;265:1355–1360.

Di Paolo N., Guarnieri A., Loi F., Sacchi G., Mangiarotti A. M., Di Paolo M.. Acute renal failure from inhalation of mycotoxins. *Nephron.* 1993;64:621–625.

Krogh P.. Role of ochratoxin in disease causation. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 1992;30:213–224.

Bach P. H., Gregg N. J., Delacruz L.. Relevance of a rat model of papillary necrosis and upper urothelial carcinoma in understanding the role of ochratoxin A in Balkan endemic nephropathy and its associated carcinoma. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 1992;30:205–211.

Boorman G. A., McDonald M. R., Imoto S., Persing R.. Renal lesions induced by ochratoxin A exposure in the F344 rat. *Toxicologic pathology.* 1992;20:236–245.

Braunberg R. C., Gantt O., Barton C., Friedman L.. In vitro effects of the nephrotoxins ochratoxin A and citrinin upon biochemical function of porcine kidney. *Archives of environmental contamination and toxicology.* 1992;22:464–470.

Chong X., Rahimtula A. D.. Alterations in ATP-dependent calcium uptake by rat renal cortex microsomes following ochratoxin A administration in vivo or addition in vitro. *Biochemical pharmacology.* 1992;44:1401–1409.

Rahimtula A. D., Chong X.. Alterations in calcium homeostasis as a possible cause of ochratoxin A nephrotoxicity. *IARC scientific publications.* 1991:207–214.

Mantle P. G., McHugh K. M., Adatia R., Gray T., Turner D. R.. Persistent karyomegaly caused by *Penicillium* nephrotoxins in the rat. *Proceedings. Biological sciences / The Royal Society.* 1991;246:251–259.

Dietrich D. R., Swenberg J. A.. Preneoplastic lesions in rodent kidney induced spontaneously or by non-genotoxic agents: predictive nature and comparison to lesions induced by genotoxic carcinogens. *Mutation research.* 1991;248:239–260.

Pepeljnjak S., Cepelak I., Juretić D.. Effect of ochratoxin A on brush border enzymes of rat kidney. *IARC scientific publications.* 1991:273–277.

Rati E. R., Shantha T., Ramesh H. P.. Effect of long term feeding and withdrawal of aflatoxin B1 and ochratoxin A on kidney cell transformation in albino rats. *Indian journal of experimental biology.* 1991;29:813–817.

Aleo M. D., Wyatt R. D., Schnellmann R. G.. Mitochondrial dysfunction is an early event in ochratoxin A but not oosporein toxicity to rat renal proximal tubules. *Toxicology and applied pharmacology.* 1991;107:73–80.

Castegnaro M., Chernozemsky I. N., Hietanen E., Bartsch H.. Are mycotoxins risk factors for endemic nephropathy and associated urothelial cancers? *Archiv für Geschwulstforschung.* 1990;60:295–303.

Cvetnić Z., Pepeljnjak S.. Ochratoxinogenicity of *Aspergillus ochraceus* strains from nephropathic and non-nephropathic areas in Yugoslavia. *Mycopathologia.* 1990;110:93–99.

Glahn R. P., Shapiro R. S., Vena V. E., Wideman R. F., Huff W. E.. Effects of chronic ochratoxin A and citrinin toxicosis on kidney function of single comb White Leghorn pullets. *Poultry science.* 1989;68:1205–1212.

Jung K. Y., Endou H.. Nephrotoxicity assessment by measuring cellular ATP content. II. Intranephron site of ochratoxin A nephrotoxicity. *Toxicology and applied pharmacology.* 1989;100:383–390.

Thekkumkara T. J., Patel M. S.. Ochratoxin A decreases the activity of phosphoenolpyruvate carboxykinase and its mRNA content in primary cultures of rat kidney proximal convoluted tubule cells. *Biochemical and biophysical research communications.* 1989;162:916–920.

Krogh P., Gyrd-Hansen N., Hald B., et al. Renal enzyme activities in experimental ochratoxin A-induced porcine nephropathy: diagnostic potential of phosphoenolpyruvate carboxykinase and gamma-glutamyl transpeptidase activity. *Journal of toxicology and environmental health.* 1988;23:1–14.

Glahn R. P., Wideman R. F., Evangelisti J. W., Huff W. E.. Effects of ochratoxin A alone and in combination with citrinin on kidney function of single comb White Leghorn pullets. *Poultry science.* 1988;67:1034–1042.

Meisner H., Cimbala M.. Effect of ochratoxin A on gene expression in rat kidneys. *Developments in toxicology and environmental science.* 1986;12:261–271.

Brown T. P., Manning R. O., Fletcher O. J., Wyatt R. D.. The individual and combined effects of citrinin and ochratoxin A on renal ultrastructure in layer chicks. *Avian diseases.* 1986;30:191–198.

Kane A., Creppy E. E., Roth A., Röschenhaller R., Dirheimer G.. Distribution of the [³H]-label from low doses of radioactive ochratoxin A ingested by rats, and evidence for DNA single-strand breaks caused in liver and kidneys. *Archives of toxicology.* 1986;58:219–224.

Kane A., Creppy E. E., Röschenhaller R., Dirheimer G.. Biological changes in kidney of rats fed subchronically with low doses of ochratoxin A. *Developments in toxicology and environmental science.* 1986;14:241–250.

Kane A., Creppy E. E., Röschenhaller R., Dirheimer G.. Changes in urinary and renal tubular enzymes caused by subchronic administration of ochratoxin A in rats. *Toxicology.* 1986;42:233–243.

Elling F., Nielsen J. P., Lillehøj E. B., Thomassen M. S., Størmer F. C.. Ochratoxin A-induced porcine nephropathy: enzyme and ultrastructure changes after short-term exposure. *Toxicon.* 1985;23:247–254.

Stein A. F., Phillips T. D., Kubena L. F., Harvey R. B.. Renal tubular secretion and reabsorption as factors in ochratoxicosis: effects of probenecid on nephrotoxicity. *Journal of toxicology and environmental health.* 1985;16:593–605.

Creppy E. E., Kane A., Dirheimer G., Lafarge-Frayssinet C., Mousset S., Frayssinet C.. Genotoxicity of ochratoxin A in mice: DNA single-strand break evaluation in spleen, liver and kidney. *Toxicology letters*. 1985;28:29–35.

Creppy E. E., Kane A., Dirheimer G., Lafarge-Frayssinet C., Mousset S., Frayssinet C.. [DNA damage in the spleen, liver and kidneys of mice treated with ochratoxin A]. *Comptes rendus des séances de la Société de biologie et de ses filiales*. 1985;179:688–695.

Ngaha E. O.. Biochemical changes in the rat during experimentally induced acute ochratoxicosis. *Enzyme*. 1985;33:1–8.

Stein A. F., Geerling S., Mollenhauer H. H., Kubena L. F., Heidelbaugh N. D., Phillips T. D.. Effects of ochratoxin A in the partially nephrectomized rat. *Journal of toxicology and environmental health*. 1984;14:535–550.

Goliński P., Hult K., Grabarkiewicz-Szczesna J., Cheńkowski J., Kneblewski P., Szebiotko K.. Mycotoxic porcine nephropathy and spontaneous occurrence of ochratoxin A residues in kidneys and blood of Polish swine. *Applied and environmental microbiology*. 1984;47:1210–1212.

Mayura K., Stein A. F., Berndt W. O., Phillips T. D.. Teratogenic effects of Ochratoxin A in rats with impaired renal function. *Toxicology*. 1984;32:277–285.

Meisner H., Meisner P.. Ochratoxin A, an in vivo inhibitor of renal phosphoenolpyruvate carboxykinase. *Archives of biochemistry and biophysics*. 1981;208:146–153.

Berndt W. O., Hayes A. W., Phillips R. D.. Effects of mycotoxins on renal function: mycotoxic nephropathy. *Kidney international*. 1980;18:656–664.

Gupta M., Bandyopadhyay S., Paul B., Mazumdar S. K.. Histochemical determination of adrenal steroidogenesis in rat after treatment with ochratoxin A. *Endokrinologie*. 1980;75:369–372.

Berndt W. O., Hayes A. W.. In vivo and in vitro changes in renal function caused by ochratoxin A in the rat. *Toxicology*. 1979;12:5–17.

Meisner H., Selanik P.. Inhibition of renal gluconeogenesis in rats by ochratoxin. *The Biochemical journal*. 1979;180:681–684.

Krogh P., Elling F., Friis C., et al. Porcine nephropathy induced by long-term ingestion of ochratoxin A. *Veterinary pathology.* 1979;16:466–475.

Elling F.. Ochratoxin A-induced mycotoxic porcine nephropathy: alterations in enzyme activity in tubular cells. *Acta pathologica et microbiologica Scandinavica. Section A, Pathology.* 1979;87A:237–243.

Krogh P.. Casual associations of mycotoxic nephropathy. *Acta pathologica et microbiologica Scandinavica. Supplement.* 1978:1–28.

Rutqvist L., Björklund N. E., Hult K., Hökby E., Carlsson B.. Ochratoxin A as the cause of spontaneous nephropathy in fattening pigs. *Applied and environmental microbiology.* 1978;36:920–925.

Kitchen D. N., Carlton W. W., Tuite J.. Ochratoxin A and citrinin induced nephrosis in Beagle dogs. I. Clinical and clinicopathological features. *Veterinary pathology.* 1977;14:154–172.

Krogh P.. Ochratoxin A residues in tissues of slaughter pigs with nephropathy. *Nordisk veterinaermedicin.* 1977;29:402–405.

Kitchen D. N., Carlton W. W., Tuite J.. Ochratoxin A and citrinin induced nephrosis in Beagle dogs. II. Pathology. *Veterinary pathology.* 1977;14:261–272.

Kitchen D. N., Carlton W. W., Hinsman E. J.. Ochratoxin A and citrinin induced nephrosis in Beagle dogs. III. Terminal renal ultrastructural alterations. *Veterinary pathology.* 1977;14:392–406.

Krogh P., Elling F., Gyrd-Hansen N., et al. Experimental porcine nephropathy: changes of renal function and structure perorally induced by crystalline ochratoxin A. *Acta pathologica et microbiologica Scandinavica. Section A, Pathology.* 1976;84:429–434.

Suzuki S., Kozuka Y., Satoh T., Yamazaki M.. Studies on the nephrotoxicity of ochratoxin A in rats. *Toxicology and applied pharmacology.* 1975;34:479–490.

Steyn P. S., Vleggaar R., Du Preez N. P., Blyth A. A., Seegers J. C.. The in vitro toxicity of analogs of ochratoxin A in monkey kidney epithelial cells. *Toxicology and applied pharmacology.* 1975;32:198–203.

Szczecz G. M., Carlton W. W., Hinsman E. J.. Ochratoxicosis in Beagle dogs. III. Terminal renal ultrastructural alterations. *Veterinary pathology*. 1974;11:385–406.

Krogh P., Axelsen N. H., Elling F., et al. Experimental porcine nephropathy. Changes of renal function and structure induced by ochratoxin A- contaminated feed. *Acta pathologica et microbiologica Scandinavica. Supplement*. 1974;0:1–21.

Elling F., Moller T.. Mycotoxic nephropathy in pigs. *Bulletin of the World Health Organization*. 1973;49:411–418.

Balkan Endemic Nephropathy

Mantle Peter, Modalca Mirela, Nicholls Andrew, Tatu Calin, Tatu Diana, Toncheva Draga. Comparative (1)H NMR metabolomic urinalysis of people diagnosed with Balkan endemic nephropathy, and healthy subjects, in Romania and Bulgaria: a pilot study. *Toxins*. 2011;3:815–833.

Yordanova Pavlina, Wilfried Karmaus, Tsolova Svetla, Dimitrov Plamen. Ochratoxin A and β2-microglobulin in BEN patients and controls. *Toxins*. 2010;2:780–792.

Stefanović Vladisav, Polenaković Momir. Fifty years of research in Balkan endemic nephropathy: where are we now? *Nephron. Clinical practice*. 2009;112.

Schiller Adalbert, Gusbeth-Tatomir Paul, Pavlovic Nikola, Ferluga Dusan, Spasovski Goce, Covic Adrian. Balkan endemic nephropathy: a still unsolved puzzle. *Journal of nephrology*. 2008;21:673–680.

Long David T., Voice Thomas C.. Role of exposure analysis in solving the mystery of Balkan endemic nephropathy. *Croatian medical journal*. 2007;48:300–311.

Grollman Arthur P., Jelaković Bojan. Role of environmental toxins in endemic (Balkan) nephropathy. October 2006, Zagreb, Croatia. *Journal of the American Society of Nephrology : JASN*. 2007;18:2817–2823.

Stefanovic Vladisav, Toncheva Draga, Atanasova Srebrena, Polenakovic Momir. Etiology of Balkan endemic nephropathy and associated urothelial cancer. American journal of nephrology. 2006;26:1–11.

Castegnaro Marcel, Canadas Delphine, Vrabcheva Terry, Petkova-Bocharova Theodora, Chernozemsky Ivan N., Pfohl-Leszkowicz Annie. Balkan endemic nephropathy: role of ochratoxins A through biomarkers. Molecular nutrition & food research. 2006;50:519–529.

Vrabcheva Terry, Petkova-Bocharova Theodora, Grosso Frederic, et al. Analysis of ochratoxin A in foods consumed by inhabitants from an area with balkan endemic nephropathy: a 1 month follow-up study. Journal of agricultural and food chemistry. 2004;52:2404–2410.

Grosso F., Saïd S., Mabrouk I., et al. New data on the occurrence of ochratoxin A in human sera from patients affected or not by renal diseases in Tunisia. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2003;41:1133–1140.

Stoev S. D.. The role of ochratoxin A as a possible cause of Balkan endemic nephropathy and its risk evaluation. Veterinary and human toxicology. 1998;40:352–360.

Tatu C. A., Orem W. H., Finkelman R. B., Feder G. L.. The etiology of Balkan endemic nephropathy: still more questions than answers. Environmental health perspectives. 1998;106:689–700.

Radić B., Fuchs R., Peraica M., Lucić A.. Ochratoxin A in human sera in the area with endemic nephropathy in Croatia. Toxicology letters. 1997;91:105–109.

Petkova-Bocharova T., Castegnaro M.. Ochratoxin A in human blood in relation to Balkan endemic nephropathy and urinary tract tumours in Bulgaria. IARC scientific publications. 1991:135–137.

Castegnaro M., Maru V., Petkova-Bocharova T., Nikolov I., Bartsch H.. Concentrations of ochratoxin A in the urine of endemic nephropathy patients and controls in Bulgaria: lack of detection of 4-hydroxyochratoxin A. IARC scientific publications. 1991:165–169.

Petkova-Bocharova T., Castegnaro M., Michelon J., Maru V.. Ochratoxin A and other mycotoxins in cereals from an area of Balkan endemic nephropathy and urinary tract tumours in Bulgaria. IARC scientific publications. 1991:83–87.

Manolov G., Manolova Y., Castegnaro M., Chernozemsky I. N.. Chromosomal alterations in lymphocytes of patients with Balkan endemic nephropathy and of healthy individuals after incubation in vitro with ochratoxin A. IARC scientific publications. 1991:267–272.

Ceović S., Plestina R., Milić-Medved M., Stavljenić A., Mitar J., Vukelić M.. Epidemiological aspects of Balkan endemic nephropathy in a typical focus in Yugoslavia. IARC scientific publications. 1991:5–10.

Bach P. H.. A molecular basis for target-cell toxicity and upper urothelial carcinoma in analgesic abusers and patients with Balkan endemic nephropathy. IARC scientific publications. 1991:215–227.

Plestina R., Ceović S., Gatenbeck S., et al. Human exposure to ochratoxin A in areas of Yugoslavia with endemic nephropathy. Journal of environmental pathology, toxicology and oncology. 1990;10:145–148.

Nikolov I. G., Chernozemsky I. N.. Balkan endemic nephropathy and transitional cell carcinoma: two fatal chronic diseases and the environment. Journal of environmental pathology, toxicology and oncology. 1990;10:317–320.

Manolova Y., Manolov G., Parvanova L., Petkova-Bocharova T., Castegnaro M., Chernozemsky I. N.. Induction of characteristic chromosomal aberrations, particularly X-trisomy, in cultured human lymphocytes treated by ochratoxin A, a mycotoxin implicated in Balkan endemic nephropathy. Mutation research. 1990;231:143–149.

Radovanovic Z.. Aetiology of Balkan nephropathy: a reappraisal after 30 years. European journal of epidemiology. 1989;5:372–377.

Petkova-Bocharova T., Chernozemsky I. N., Castegnaro M.. Ochratoxin A in human blood in relation to Balkan endemic nephropathy and urinary system tumours in Bulgaria. Food additives and contaminants. 1988;5:299–301.

Pepelnjak S., Cvetnić Z.. The mycotoxicological chain and contamination of food by ochratoxin A in the nephropathic and non-nephropathic areas in Yugoslavia. *Mycopathologia*. 1985;90:147–153.

Pavlović M., Plestina R., Krogh P.. Ochratoxin A contamination of foodstuffs in an area with Balkan (endemic) nephropathy. *Acta pathologica et microbiologica Scandinavica. Section B, Microbiology*. 1979;87:243–246.

Krogh P., Hald B., Plestina R., Ceović S.. Balkan (endemic) nephropathy and foodborn ochratoxin A: preliminary results of a survey of foodstuffs. *Acta pathologica et microbiologica Scandinavica. Section B, Microbiology*. 1977;85:238–240.

Elling F., Krogh P.. Fungal toxins and Balkan (endemic) nephropathy. *Lancet*. 1977;1.

Effects on Offspring

Hsuuw Yan-Der D., Chan Wen-Hsiung H., Yu Jau-Song S.. Ochratoxin a inhibits mouse embryonic development by activating a mitochondrion-dependent apoptotic signaling pathway. *International journal of molecular sciences*. 2013;14:935–953.

Minervini Fiorenza, Giannoccaro Alessandra, Nicassio Michele, Panzarini Giuseppe, Lacalandra Giovanni Michele M.. First evidence of placental transfer of ochratoxin A in horses. *Toxins*. 2013;5:84–92.

Klapc T., Sarkanj B., Banjari I., Strelec I.. Urinary ochratoxin A and ochratoxin alpha in pregnant women. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2012;50:4487–4492.

Woo Chit Shing Jackson S., Partanen Heidi, Myllynen Päivi, Vähäkangas Kirsi, El-Nezami Hani. Fate of the teratogenic and carcinogenic ochratoxin A in human perfused placenta. *Toxicology letters*. 2012;208:92–99.

Hassan Zahoor, Khan Muhammad Zargham Z., Saleemi Muhammad Kashif K., Khan Ahrar, Javed Ijaz, Bhatti Sheraz Ahmed A.. Toxicopathological effects of in ovo inoculation of ochratoxin A (OTA) in chick embryos and subsequently in hatched chicks. *Toxicologic pathology*. 2012;40:33–39.

Zahoor-Ul-Hassan , Khan Muhammad Zargham Z., Khan Ahrar, Javed Ijaz, Saleemi Muhammad Kashif K.. Immunological status of the progeny of breeder hens kept on ochratoxin A (OTA)-contaminated feed. *Journal of immunotoxicology*. 2011;8:122–130.

Ueta Etsuko, Kodama Mami, Sumino Yoshiki, et al. Gender-dependent differences in the incidence of ochratoxin A-induced neural tube defects in the Pdn/Pdn mouse. *Congenital anomalies*. 2010;50:29–39.

Wilk-Zasadna Iwona, Minta Maria. Developmental toxicity of ochratoxin a in rat embryo midbrain micromass cultures. *International journal of molecular sciences*. 2009;10:37–49.

Katagiri Ryu-ichi, Kurome Maho, Teshima Yuko, Ueta Etsuko, Naruse Ichiro. Prevention of ochratoxin A-induced neural tube defects by folic acid in the genetic polydactyl/arhinencephaly mouse, Pdn/Pdn. *Congenital anomalies*. 2007;47:90–96.

Ohta Ken-ichi, Maekawa Mizuho, Katagiri Ryu-ichi, Ueta Etsuko, Naruse Ichiro. Genetic susceptibility in the neural tube defects induced by ochratoxin A in the genetic arhinencephaly mouse, Pdn/Pdn. *Congenital anomalies*. 2006;46:144–148.

Patil Rajendra D., Dwivedi Prabhaker, Sharma Anil K.. Critical period and minimum single oral dose of ochratoxin A for inducing developmental toxicity in pregnant Wistar rats. *Reproductive toxicology* (Elmsford, N.Y.). 2006;22:679–687.

O'Brien E., Prietz A., Dietrich Daniel R.. Investigation of the teratogenic potential of ochratoxin A and B using the FETAX system. *Birth defects research. Part B, Developmental and reproductive toxicology*. 2005;74:417–423.

Wangikar P. B., Dwivedi P., Sinha Neeraj, Sharma A. K., Telang A. G.. Teratogenic effects in rabbits of simultaneous exposure to ochratoxin A and aflatoxin B1 with special reference to microscopic effects. *Toxicology*. 2005;215:37–47.

Wangikar P. B., Dwivedi P., Sharma A. K., Sinha Neeraj. Effect in rats of simultaneous prenatal exposure to ochratoxin A and aflatoxin B1. II. Histopathological features of teratological anomalies induced in fetuses. *Birth defects research. Part B, Developmental and reproductive toxicology*. 2004;71:352–358.

Wangikar P. B., Dwivedi P., Sinha Neeraj. Effect in rats of simultaneous prenatal exposure to ochratoxin A and aflatoxin B1. I. Maternal toxicity and fetal malformations.

Birth defects research. Part B, Developmental and reproductive toxicology. 2004;71:343–351.

Hong Jin Tae T., Lee Myung Koo K., Park Ki Sook S., et al. Inhibitory effect of peroxisome proliferator-activated receptor gamma agonist on ochratoxin A-induced cytotoxicity and activation of transcription factors in cultured rat embryonic midbrain cells. Journal of toxicology and environmental health. Part A. 2002;65:407–418.

Hong J. T., Park K. L., Han S. Y., et al. Effects of ochratoxin A on cytotoxicity and cell differentiation in cultured rat embryonic cells. Journal of toxicology and environmental health. Part A. 2000;61:609–621.

Dopp E., Müller J., Hahnel C., Schiffmann D.. Induction of genotoxic effects and modulation of the intracellular calcium level in syrian hamster embryo (SHE) fibroblasts caused by ochratoxin A. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 1999;37:713–721.

Hallén I. P., Breitholtz-Emanuelsson A., Hult K., Olsen M., Oskarsson A.. Placental and lactational transfer of ochratoxin A in rats. Natural toxins. 1998;6:43–49.

Petkova-Bocharova T., Stoichev I. I., Chernozemsky I. N., Castegnaro M., Pfohl-Leszkowicz A.. Formation of DNA adducts in tissues of mouse progeny through transplacental contamination and/or lactation after administration of a single dose of ochratoxin A to the pregnant mother. Environmental and molecular mutagenesis. 1998;32:155–162.

Thuvander A., Breitholtz-Emanuelsson A., Brabencova D., Gadhasson I.. Prenatal exposure of Balb/c mice to ochratoxin A: effects on the immune system in the offspring. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 1996;34:547–554.

Thuvander A., Funseth E., Breitholtz-Emanuelsson A., Hallén I. P., Oskarsson A.. Effects of ochratoxin A on the rat immune system after perinatal exposure. Natural toxins. 1996;4:141–147.

Thuvander A., Dahl P., Breitholtz-Emanuelsson A.. Influence of perinatal ochratoxin A exposure on the immune system in mice. Natural toxins. 1996;4:174–180.

Wei X., Sulik K. K.. Pathogenesis of caudal dysgenesis/sirenomelia induced by ochratoxin A in chick embryos. *Teratology*. 1996;53:378–391.

Edrington T. S., Harvey R. B., Kubena L. F.. Toxic effects of aflatoxin B1 and ochratoxin A, alone and in combination, on chicken embryos. *Bulletin of environmental contamination and toxicology*. 1995;54:331–336.

Jonsyn F. E., Maxwell S. M., Hendrickse R. G.. Human fetal exposure to ochratoxin A and aflatoxins. *Annals of tropical paediatrics*. 1995;15:3–9.

Miki T., Fukui Y., Takeuchi Y., Itoh M.. A quantitative study of the effects of prenatal X-irradiation on the development of cerebral cortex in rats. *Neuroscience research*. 1995;23:241–247.

Shirai S.. [Developmental mechanisms of congenital eye abnormalities]. *Nippon Ganka Gakkai zasshi*. 1991;95:1206–1237.

Mayura K., Edwards J. F., Maull E. A., Phillips T. D.. The effects of ochratoxin A on postimplantation rat embryos in culture. *Archives of environmental contamination and toxicology*. 1989;18:411–415.

Wiger R., Størmer F. C.. Effects of ochratoxins A and B on prechondrogenic mesenchymal cells from chick embryo limb buds. *Toxicology letters*. 1990;54:129–134.

Ohshika S., Shirai S., Majima A.. [Developmental abnormalities of the optic disc induced in mouse fetuses by ochratoxin A]. *Nippon Ganka Gakkai zasshi*. 1988;92:414–422.

Tamaru M., Hirata Y., Matsutani T.. Neurochemical effects of prenatal treatment with ochratoxin A on fetal and adult mouse brain. *Neurochemical research*. 1988;13:1139–1147.

Harvey R. B., Kubena L. F., Naqi S. A., et al. Immunologic effects of low levels of ochratoxin A in ovo: utilization of a chicken embryo model. *Avian diseases*. 1987;31:787–791.

Fukui Y., Hoshino K., Kameyama Y., Yasui T., Toda C., Nagano H.. Placental transfer of ochratoxin A and its cytotoxic effect on the mouse embryonic brain. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1987;25:17–24.

Fukui Y., Hoshino K., Kameyama Y.. Developmental abnormalities of mouse cerebellum induced by intracisternal injection of ochratoxin A in neonatal period. *Experimental neurology.* 1987;98:54–66.

Shirai S., Ohshika S., Majima A.. [Developmental abnormalities of the anterior segment of the eye induced in mice by ochratoxin A]. *Nippon Ganka Gakkai zasshi.* 1985;89:753–760.

Katayama S., Matsumoto N.. Toxic effects of chemicals on mouse post-blastocyst development—a trial to establish a testing system for embryotoxicity. *Nihon Sanka Fujinka Gakkai zasshi.* 1985;37:421–430.

Singh J., Hood R. D.. Maternal protein deprivation enhances the teratogenicity of ochratoxin A in mice. *Teratology.* 1985;32:381–388.

Shirai S., Ohshika S., Yuguchi S., Majima A.. [Developmental eye abnormalities in mouse fetuses induced by ochratoxin A]. *Nippon Ganka Gakkai zasshi.* 1984;88:627–634.

Mayura K., Parker R., Berndt W. O., Phillips T. D.. Effect of simultaneous prenatal exposure to ochratoxin A and citrinin in the rat. *Journal of toxicology and environmental health.* 1984;13:553–561.

Mayura K., Parker R., Berndt W. O., Phillips T. D.. Ochratoxin A-induced teratogenesis in rats: partial protection by phenylalanine. *Applied and environmental microbiology.* 1984;48:1186–1188.

Mayura K., Hayes A. W., Berndt W. O.. Effects of dietary protein on teratogenicity of ochratoxin A in rats. *Toxicology.* 1983;27:147–157.

Poppe S. M., Stuckhardt J. L., Szczech G. M.. Postnatal behavioral effects of ochratoxin A in offspring of treated mice. *Teratology.* 1983;27:293–300.

Mayura K., Reddy R. V., Hayes A. W., Berndt W. O.. Embryocidal, fetotoxic and teratogenic effects of ochratoxin A in rats. *Toxicology.* 1982;25:175–185.

Szczech G. M., Hood R. D.. Brain necrosis in mouse fetuses transplacentally exposed to the mycotoxin ochratoxin A. *Toxicology and applied pharmacology.* 1981;57:127–137.

Siraj M. Y., Phillips T. D., Hayes A. W.. Effects of the mycotoxins citrinin and ochratoxin a on hepatic mixed-function oxidase and adenosinetriphosphatase in neonatal rats. *Journal of toxicology and environmental health.* 1981;8:131–140.

Gupta M., Bandyopadhyay S., Paul B., Mazumdar S. K.. Ovarian steroidogenesis and development of fetuses following ochratoxin A treatment in pregnant rats. *Endokrinologie.* 1981;77:152–160.

Arora R. G., Frölén H.. Interference of mycotoxins with prenatal development of the mouse. II. Ochratoxin A induced teratogenic effects in relation to the dose and stage of gestation. *Acta veterinaria Scandinavica.* 1981;22:535–552.

Arora R. G., Frölén H., Nilsson A.. Interference of mycotoxins with prenatal development of the mouse. I. Influence of aflatoxin B1, ochratoxin A and zearalenone. *Acta veterinaria Scandinavica.* 1981;22:524–534.

Hood R. D., Kuczuk M. H., Szczech G. M.. Effects in mice of simultaneous prenatal exposure to ochratoxin A and T-2 toxin. *Teratology.* 1978;17:25–29.

Moré J., Galtier P., Alvinerie M.. [Toxicity of ochratoxin A. 3. Effects during the initial stages of pregnancy in the rat]. *Annales de recherches vétérinaires. Annals of veterinary research.* 1978;9:169–173.

Szczech G. M., Hood R. D.. Animal model of human disease: alimentary toxic aleukia, fetal brain necrosis, and renal tubular necrosis. *The American journal of pathology.* 1978;91:689–692.

Shreeve B. J., Patterson D. S., Pepin G. A., Roberts B. A., Wrathall A. E.. Effect of feeding ochratoxin to pigs during early pregnancy. *The British veterinary journal.* 1977;133:412–417.

Brown M. H., Szczech G. M., Purmalis B. P.. Teratogenic and toxic effects of ochratoxin A in rats. *Toxicology and applied pharmacology.* 1976;37:331–338.

Patterson D. S., Roberts B. A., Small B. J.. Metabolism of ochratoxins A and B in the pig during early pregnancy and the accumulation in body tissues of ochratoxin A only. *Food and cosmetics toxicology.* 1976;14:439–442.

Hayes A. W., Hood R. D., Lee H. L.. Teratogenic effects of ochratoxin A in mice. *Teratology.* 1974;9:93–97.

Still P. E., Macklin A. W., Ribelin W. E., Smalley E. B.. Relationship of ochratoxin A to foetal death in laboratory and domestic animals. *Nature.* 1971;234:563–564.

Presence in Milk

Biasucci G., Calabrese G., Di Giuseppe R., et al. The presence of ochratoxin A in cord serum and in human milk and its correspondence with maternal dietary habits. *European journal of nutrition.* 2011;50:211–218.

Meucci V., Razzuoli E., Soldani G., Massart F.. Mycotoxin detection in infant formula milks in Italy. *Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment.* 2010;27:64–71.

Gürbay A., Girgin G., Sabuncuoğlu S. Atasayar, et al. Ochratoxin A: is it present in breast milk samples obtained from mothers from Ankara, Turkey? *Journal of applied toxicology : JAT.* 2010;30:329–333.

Galvano Fabio, Pietri Amedeo, Bertuzzi Terenzio, et al. Maternal dietary habits and mycotoxin occurrence in human mature milk. *Molecular nutrition & food research.* 2008;52:496–501.

Dostal A., Jakusova L., Cajdova J., Hudeckova H.. Results of the first studies of occurrence of ochratoxin A in human milk in Slovakia. *Bratislavské lekárske listy.* 2008;109:276–278.

Postupolski Jacek, KarNowski Kazimierz, Kubik Paweł. Ochratoxin a in maternal and foetal blood and in maternal milk. *Roczniki Państwowego Zakładu Higieny.* 2006;57:23–30.

Hassan Ahmed M., Sheashaa Hussein A., Fattah Mohamed Abdel F., Ibrahim Alla Z., Gaber Osama A., Sobh Mohamed A.. Study of ochratoxin A as an environmental risk that causes renal injury in breast-fed Egyptian infants. *Pediatric nephrology (Berlin, Germany)*. 2006;21:102–105.

Turconi Giovanna, Guarcello Marianna, Livieri Chiara, et al. Evaluation of xenobiotics in human milk and ingestion by the newborn—an epidemiological survey in Lombardy (Northern Italy). *European journal of nutrition*. 2004;43:191–197.

Skaug M. A., Helland I., Solvoll K., Saugstad O. D.. Presence of ochratoxin A in human milk in relation to dietary intake. *Food additives and contaminants*. 2001;18:321–327.

Ferrufino-Guardia E. V., Tangni E. K., Larondelle Y., Ponchaut S.. Transfer of ochratoxin A during lactation: exposure of suckling via the milk of rabbit does fed a naturally-contaminated feed. *Food additives and contaminants*. 2000;17:167–175.

Skaug M. A.. Analysis of Norwegian milk and infant formulas for ochratoxin A. *Food additives and contaminants*. 1999;16:75–78.

Skaug M. A., Størmer F. C., Saugstad O. D.. Ochratoxin A: a naturally occurring mycotoxin found in human milk samples from Norway. *Acta paediatrica (Oslo, Norway : 1992)*. 1998;87:1275–1278.

Valenta H., Goll M.. Determination of ochratoxin A in regional samples of cow's milk from Germany. *Food additives and contaminants*. 1996;13:669–676.

Miraglia M., Dominicis A., Brera C., et al. Ochratoxin A levels in human milk and related food samples: an exposure assessment. *Natural toxins*. 1995;3:436–444.

Jonsyn F. E., Maxwell S. M., Hendrickse R. G.. Ochratoxin A and aflatoxins in breast milk samples from Sierra Leone. *Mycopathologia*. 1995;131:121–126.

Micco C., Miraglia M., Brera C., Corneli S., Ambruzzi A.. Evaluation of ochratoxin A level in human milk in Italy. *Food additives and contaminants*. 1995;12:351–354.

Breitholtz-Emanuelsson A., Olsen M., Oskarsson A., Palminger I., Hult K.. Ochratoxin A in cow's milk and in human milk with corresponding human blood samples. *Journal of AOAC International*. 1993;76:842–846.

Breitholtz-Emanuelsson A., Palminger-Hallén I., Wohlin P. O., Oskarsson A., Hult K., Olsen M.. Transfer of ochratoxin A from lactating rats to their offspring: a short-term study. *Natural toxins.* 1993;1:347–352.

Micco C., Ambruzzi M. A., Miraglia M., Brera C., Onori R., Benelli L.. Contamination of human milk with ochratoxin A. *IARC scientific publications.* 1991:105–108.

Gareis M., Märtblauer E., Bauer J., Gedek B.. [Determination of ochratoxin A in human milk]. *Zeitschrift für Lebensmittel-Untersuchung und -Forschung.* 1988;186:114–117.

Effects on Liver

Matsuda Yasunobu, Wakai Toshifumi, Kubota Masayuki, Osawa Mami, Sanpei Ayumi, Fujimaki Shun. Mycotoxins are conventional and novel risk biomarkers for hepatocellular carcinoma. *World journal of gastroenterology : WJG.* 2013;19:2587–2590.

Essid Ebtisam, Dernawi Yousef, Petzinger Ernst. Apoptosis induction by OTA and TNF- α in cultured primary rat hepatocytes and prevention by silibinin. *Toxins.* 2012;4:1139–1156.

Ayed-Boussema Imen, Pascussi Jean Marc M., Zaied Chiraz, Maurel Patrick, Bacha Hassen, Hassen Wafa. Ochratoxin A induces CYP3A4, 2B6, 3A5, 2C9, 1A1, and CYP1A2 gene expression in primary cultured human hepatocytes: a possible activation of nuclear receptors. *Drug and chemical toxicology.* 2012;35:71–80.

Corcuera L. A., Arbillaga L., Vettorazzi A., Azqueta A., Cerain A.. Ochratoxin A reduces aflatoxin B1 induced DNA damage detected by the comet assay in Hep G2 cells. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 2011;49:2883–2889.

Chopra Martin, Link Pascal, Michels Christine, Schrenk Dieter. Characterization of ochratoxin A-induced apoptosis in primary rat hepatocytes. *Cell biology and toxicology.* 2010;26:239–254.

Al-Anati Lauy, Essid Ebtisam, Stenius Ulla, Beuerlein Knut, Schuh Klaus, Petzinger Ernst. Differential cell sensitivity between OTA and LPS upon releasing TNF- α . Toxins. 2010;2:1279–1299.

El Golli Bennour Emna, Rodriguez-Enfedaque Aïda, Bouaziz Chayma, Ladjimi Moncef, Renaud Flore, Bacha Hassen. Toxicities induced in cultured human hepatocarcinoma cells exposed to ochratoxin A: oxidative stress and apoptosis status. Journal of biochemical and molecular toxicology. 2009;23:87–96.

El Golli Bennour Emna, Bouaziz Chayma, Ladjimi Moncef, Renaud Flore, Bacha Hassen. Comparative mechanisms of zearalenone and ochratoxin A toxicities on cultured HepG2 cells: is oxidative stress a common process? Environmental toxicology. 2009;24:538–548.

Bouaziz Chayma, Sharaf El Dein Ossama, El Golli Emna, et al. Different apoptotic pathways induced by zearalenone, T-2 toxin and ochratoxin A in human hepatoma cells. Toxicology. 2008;254:19–28.

Hundhausen Christoph, Boesch-Saadatmandi Christine, Matzner Nicole, et al. Ochratoxin a lowers mRNA levels of genes encoding for key proteins of liver cell metabolism. Cancer genomics & proteomics. 2008;5:319–332.

Iwakiri Tomomi, Okumura Manabu, Matsunaga Naoya, et al. Hepatocyte growth factor increases uptake of estradiol 17beta-D-glucuronide and Oatp1 protein level in rat hepatocytes. European journal of pharmacology. 2008;580:19–26.

Gagliano Nicoletta, Donne Isabella Dalle D., Torri Carlo, et al. Early cytotoxic effects of ochratoxin A in rat liver: a morphological, biochemical and molecular study. Toxicology. 2006;225:214–224.

Guerra M. C., Galvano F., Bonsi L., et al. Cyanidin-3-O-beta-glucopyranoside, a natural free-radical scavenger against aflatoxin B1- and ochratoxin A-induced cell damage in a human hepatoma cell line (Hep G2) and a human colonic adenocarcinoma cell line (CaCo-2). The British journal of nutrition. 2005;94:211–220.

Al-Anati L., Katz N., Petzinger E.. Interference of arachidonic acid and its metabolites with TNF-alpha release by ochratoxin A from rat liver. Toxicology. 2005;208:335–346.

Al-Anati L., Reinehr R., Van Rooijen N., Petzinger E.. In vitro induction of tumor necrosis factor- α by ochratoxin A (OTA) from rat liver: role of Kupffer cells. Mycotoxin research. 2005;21:172–175.

Renzulli C., Galvano F., Pierdomenico L., Speroni E., Guerra M. C.. Effects of rosmarinic acid against aflatoxin B1 and ochratoxin-A-induced cell damage in a human hepatoma cell line (Hep G2). Journal of applied toxicology : JAT. 2004;24:289–296.

Knasmüller Siegfried, Cavin Christophe, Chakraborty Asima, et al. Structurally related mycotoxins ochratoxin A, ochratoxin B, and citrinin differ in their genotoxic activities and in their mode of action in human-derived liver (HepG2) cells: implications for risk assessment. Nutrition and cancer. 2004;50:190–197.

Ehrlich V., Darroudi F., Uhl M., et al. Genotoxic effects of ochratoxin A in human-derived hepatoma (HepG2) cells. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2002;40:1085–1090.

Gross-Steinmeyer Kerstin, Weymann Jürgen, Hege Hans-Günter G., Metzler Manfred. Metabolism and lack of DNA reactivity of the mycotoxin ochratoxin a in cultured rat and human primary hepatocytes. Journal of agricultural and food chemistry. 2002;50:938–945.

Weidenbach A., Schuh K., Failing K., Petzinger E.. Ochratoxin A induced TNF α release from the isolated and blood- free perfused rat liver. Mycotoxin research. 2000;16 Suppl 2:189–193.

Dörrenhaus A., Föllmann W.. Effects of ochratoxin A on DNA repair in cultures of rat hepatocytes and porcine urinary bladder epithelial cells. Archives of toxicology. 1997;71:709–713.

Schlosberg A., Elkin N., Malkinson M., et al. Severe hepatopathy in geese and broilers associated with ochratoxin in their feed. Mycopathologia. 1997;138:71–76.

Kontaxi M., Echkardt U., Hagenbuch B., Stieger B., Meier P. J., Petzinger E.. Uptake of the mycotoxin ochratoxin A in liver cells occurs via the cloned organic anion transporting polypeptide. The Journal of pharmacology and experimental therapeutics. 1996;279:1507–1513.

Omar R. F., Rahimtula A. D.. Possible role of an iron-oxygen complex in 4(S)-4-hydroxyochratoxin a formation by rat liver microsomes. *Biochemical pharmacology*. 1993;46:2073–2081.

Creppy E. E., Chakor K., Fisher M. J., Dirheimer G.. The mycotoxin ochratoxin A is a substrate for phenylalanine hydroxylase in isolated rat hepatocytes and in vivo. *Archives of toxicology*. 1990;64:279–284.

Khan S., Martin M., Bartsch H., Rahimtula A. D.. Perturbation of liver microsomal calcium homeostasis by ochratoxin A. *Biochemical pharmacology*. 1989;38:67–72.

Roth A., Creppy E. E., Kane A., et al. Influence of ochratoxin B on the ochratoxin A inhibition of phenylalanyl-tRNA formation in vitro and protein synthesis in hepatoma tissue culture cells. *Toxicology letters*. 1989;45:307–313.

Wei Y. H., Lu C. Y., Lin T. N., Wei R. D.. Effect of ochratoxin A on rat liver mitochondrial respiration and oxidative phosphorylation. *Toxicology*. 1985;36:119–130.

Galtier P., Larrieu G., Le Bars J.. Comparative incidence of oral ochratoxicosis and aflatoxicosis on the activity of drug-metabolizing enzymes in rat liver. *Toxicology letters*. 1984;23:341–347.

Suzuki S., Satoh T., Yamazaki M.. Effect of ochratoxin A on carbohydrate metabolism in rat liver. *Toxicology and applied pharmacology*. 1975;32:116–122.

Pitout M. J.. The effect of ochratoxin A on glycogen storage in the rat liver. *Toxicology and applied pharmacology*. 1968;13:299–306.

Theron J. J., Merwe K. J., Liebenberg N., Joubert H. J., Nel W.. Acute liver injury in ducklings and rats as a result of ochratoxin poisoning. *The Journal of pathology and bacteriology*. 1966;91:521–529.

Atroshi F., Rizzo A., Sankari S., Biese I., Westermark T., Veijalainen P.. Liver enzyme activities of rats exposed to ochratoxin A and T-2 toxin with antioxidants. *Bulletin of environmental contamination and toxicology*. 2000;64:586–592.

Urinary & Bladder Effects

Gazinska Patrycja, Herman Diana, Gillett Cheryl, Pinder Sarah, Mantle Peter. Comparative immunohistochemical analysis of ochratoxin A tumourigenesis in rats and urinary tract carcinoma in humans; mechanistic significance of p-S6 ribosomal protein expression. *Toxins.* 2012;4:643–662.

Aslam Muhammad, Rivzi S. Abidul Hassan, Beg Anwer Ejaz E., Blaszkiewicz Meinolf, Golka Klaus, Degen Gisela H.. Analysis of ochratoxin A blood levels in bladder cancer cases and healthy persons from Pakistan. *Journal of toxicology and environmental health. Part A.* 2012;75:1176–1184.

Mantle Peter G., Nicholls Andrew W., Shockcor John P.. H NMR spectroscopy-based metabolomic assessment of uremic toxicity, with toxicological outcomes, in male rats following an acute, mid-life insult from ochratoxin a. *Toxins.* 2011;3:504–519.

Aslam M., Beg A. E., Blaszkiewicz M., Degen G. H., Golka K.. Ochratoxin A blood concentration in healthy subjects and bladder cancer cases from Pakistan. *Mycotoxin research.* 2005;21:164–167.

Föllmann W., Lebrun S.. Uptake and genotoxic effects of ochratoxin A in cultured porcine urinary bladder epithelial cells. *Mycotoxin research.* 2003;19:24–26.

Ozçelik N., Koşar A., Soysal D.. Ochratoxin A in human serum samples collected in Isparta-Turkey from healthy individuals and individuals suffering from different urinary disorders. *Toxicology letters.* 2001;121:9–13.

Pfohl-Leszkowicz A., Grosse Y., Castegnaro M., et al. Ochratoxin A-related DNA adducts in urinary tract tumours of Bulgarian subjects. *IARC scientific publications.* 1993:141–148.

Cancer

Kumar Rahul, Alam Shamshad, Chaudhari Bhushan P., et al. Ochratoxin A-induced cell proliferation and tumor promotion in mouse skin by activating the expression of cyclin-D1 and cyclooxygenase-2 through nuclear factor-kappa B and activator protein-1. *Carcinogenesis.* 2013;34:647–657.

Kumar Rahul, Ansari Kausar M., Chaudhari Bhushan P., et al. Topical application of ochratoxin A causes DNA damage and tumor initiation in mouse skin. *PloS one.* 2012;7.

Pfohl-Leszkowicz Annie, Manderville Richard A.. An update on direct genotoxicity as a molecular mechanism of ochratoxin a carcinogenicity. *Chemical research in toxicology.* 2012;25:252–262.

Czakai Kristin, Müller Katja, Mosesso Pasquale, et al. Perturbation of mitosis through inhibition of histone acetyltransferases: the key to ochratoxin a toxicity and carcinogenicity? *Toxicological sciences : an official journal of the Society of Toxicology.* 2011;122:317–329.

Marin-Kuan M., Ehrlich V., Delatour T., Cavin C., Schilter B.. Evidence for a role of oxidative stress in the carcinogenicity of ochratoxin a. *Journal of toxicology.* 2011;2011.

Stoev Stoycho D.. Studies on carcinogenic and toxic effects of ochratoxin A in chicks. *Toxins.* 2010;2:649–664.

Adler Melanie, Müller Katja, Rached Eva, Dekant Wolfgang, Mally Angela. Modulation of key regulators of mitosis linked to chromosomal instability is an early event in ochratoxin A carcinogenicity. *Carcinogenesis.* 2009;30:711–719.

Marin-Kuan Maricel, Cavin Christophe, Delatour Thierry, Schilter Benoît. Ochratoxin A carcinogenicity involves a complex network of epigenetic mechanisms. *Toxicon.* 2008;52:195–202.

Mosesso Pasquale, Cinelli Serena, Piñero Joaquin, Bellacima Raffaela, Pepe Gaetano. In vitro cytogenetic results supporting a DNA nonreactive mechanism for ochratoxin A, potentially relevant for its carcinogenicity. *Chemical research in toxicology.* 2008;21:1235–1243.

Marin-Kuan M., Nestler S., Verguet C., et al. A toxicogenomics approach to identify new plausible epigenetic mechanisms of ochratoxin a carcinogenicity in rat. *Toxicological sciences : an official journal of the Society of Toxicology.* 2006;89:120–134.

Clark Heather A., Snedeker Suzanne M.. Ochratoxin a: its cancer risk and potential for exposure. *Journal of toxicology and environmental health. Part B, Critical reviews.* 2006;9:265–296.

Schilter Benoît, Marin-Kuan Maricel, Delatour Thierry, Nestler Sandra, Mantle Peter, Cavin Christophe. Ochratoxin A: potential epigenetic mechanisms of toxicity and carcinogenicity. *Food additives and contaminants.* 2005;22 Suppl 1:88–93.

Son Woo-Chan C., Kaino Kenji, Lee Yong-Soon S., Kang Kyung-Sun S.. Strain-specific mammary proliferative lesion development following lifetime oral administration of ochratoxin A in DA and Lewis rats. *International journal of cancer. Journal international du cancer.* 2003;105:305–311.

Zepnik H., Pähler A., Schauer U., Dekant W.. Ochratoxin A-induced tumor formation: is there a role of reactive ochratoxin A metabolites? *Toxicological sciences : an official journal of the Society of Toxicology.* 2001;59:59–67.

Palli D., Miraglia M., Saieva C., et al. Serum levels of ochratoxin A in healthy adults in Tuscany: correlation with individual characteristics and between repeat measurements. *Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology.* 1999;8:265–269.

Pföhl-Leszkowicz A., Pinelli E., Bartsch H., Mohr U., Castegnaro M.. Sex- and strain-specific expression of cytochrome P450s in ochratoxin A-induced genotoxicity and carcinogenicity in rats. *Molecular carcinogenesis.* 1998;23:76–85.

Schlatter C., Studer-Rohr J., Rásonyi T.. Carcinogenicity and kinetic aspects of ochratoxin A. *Food additives and contaminants.* 1996;13 Suppl:43–44.

Groene E. M., Hassing I. G., Blom M. J., Seinen W., Fink-Gremmels J., Horbach G. J.. Development of human cytochrome P450-expressing cell lines: application in mutagenicity testing of ochratoxin A. *Cancer research.* 1996;56:299–304.

Huff J. E.. Carcinogenicity of ochratoxin A in experimental animals. *IARC scientific publications.* 1991:229–244.

Neurological Effects

Zurich Marie-Gabrielle G., Honegger Paul. Ochratoxin A at nanomolar concentration perturbs the homeostasis of neural stem cells in highly differentiated but not in immature three-dimensional brain cell cultures. *Toxicology letters*. 2011;205:203–208.

Doi Kunio, Uetsuka Koji. Mechanisms of Mycotoxin-Induced Neurotoxicity through Oxidative Stress-Associated Pathways. *International journal of molecular sciences*. 2011;12:5213–5237.

Razafimanjato Helisoa, Garmy Nicolas, Guo Xiao-Jun J., et al. The food-associated fungal neurotoxin ochratoxin A inhibits the absorption of glutamate by astrocytes through a decrease in cell surface expression of the excitatory amino-acid transporters GLAST and GLT-1. *Neurotoxicology*. 2010;31:475–484.

Zhang Xiangnan, Boesch-Saadatmandi Christine, Lou Yijia, Wolffram Siegfried, Huebbe Patricia, Rimbach Gerald. Ochratoxin A induces apoptosis in neuronal cells. *Genes & nutrition*. 2009;4:41–48.

Yoon Somy, Cong Wei-Tao T., Bang Yeojin, et al. Proteome response to ochratoxin A-induced apoptotic cell death in mouse hippocampal HT22 cells. *Neurotoxicology*. 2009;30:666–676.

Sava Vasyl, Velasquez Adriana, Song Shijie, Sanchez-Ramos Juan. Adult hippocampal neural stem/progenitor cells in vitro are vulnerable to the mycotoxin ochratoxin-A. *Toxicological sciences : an official journal of the Society of Toxicology*. 2007;98:187–197.

Sava V., Reunova O., Velasquez A., Harbison R., Sánchez-Ramos J.. Acute neurotoxic effects of the fungal metabolite ochratoxin-A. *Neurotoxicology*. 2006;27:82–92.

Sava V., Reunova O., Velasquez A., Sanchez-Ramos J.. Can low level exposure to ochratoxin-A cause parkinsonism? *Journal of the neurological sciences*. 2006;249:68–75.

Zurich M-G G., Lengacher S., Braissant O., Monnet-Tschudi F., Pellerin L., Honegger P.. Unusual astrocyte reactivity caused by the food mycotoxin ochratoxin A in aggregating rat brain cell cultures. *Neuroscience*. 2005;134:771–782.

Oh Jae Ho H., Jung Hai Kwan K., Park Yun Ju J., et al. Inhibitory effects of ochratoxin A on nerve growth factor-induced neurite extension through downregulation of p38 MAP

kinase and AP-1 activation in cultured pheochromocytoma cells. *Journal of toxicology and environmental health. Part A.* 2004;67:357–371.

Delibas Namik, Altuntas Irfan, Yonden Zafer, Ozcelik Nurten. Ochratoxin A reduces NMDA receptor subunits 2A and 2B concentrations in rat hippocampus: partial protective effect of melatonin. *Human & experimental toxicology.* 2003;22:335–339.

Belmadani A., Steyn P. S., Tramu G., Betbeder A. M., Baudrimont I., Creppy E. E.. Selective toxicity of ochratoxin A in primary cultures from different brain regions. *Archives of toxicology.* 1999;73:108–114.

Bruinink A., Rasonyi T., Sidler C.. Differences in neurotoxic effects of ochratoxin A, ochracin and ochratoxin-alpha in vitro. *Natural toxins.* 1998;6:173–177.

Carratú M. R., Belmadani A., Cuomo V., Creppy E. E.. Potassium channel modulation by the pseudopeptide ochratoxin A in rat nerve fibers. *Journal of neuroscience research.* 1998;53:312–317.

Belmadani A., Tramu G., Betbeder A. M., Steyn P. S., Creppy E. E.. Regional selectivity to ochratoxin A, distribution and cytotoxicity in rat brain. *Archives of toxicology.* 1998;72:656–662.

Monnet-Tschudi F., Sorg O., Honegger P., Zurich M. G., Huggett A. C., Schilter B.. Effects of the naturally occurring food mycotoxin ochratoxin A on brain cells in culture. *Neurotoxicology.* 1997;18:831–839.

Zanić-Grubisić T., Santini A., Cepelak I., Barisić K., Juretić D., Pepeljnjak S.. Influence of ochratoxin A treatment on the activity of membrane bound enzymes in rat brain regions. *Biological chemistry Hoppe-Seyler.* 1996;377:121–127.

Miki T., Fukui Y., Uemura N., Takeuchi Y.. Regional difference in the neurotoxicity of ochratoxin A on the developing cerebral cortex in mice. *Brain research. Developmental brain research.* 1994;82:259–264.

Fukui Y., Hayasaka S., Itoh M., Takeuchi Y.. Development of neurons and synapses in ochratoxin A-induced microcephalic mice: a quantitative assessment of somatosensory cortex. *Neurotoxicology and teratology.* 1992;14:191–196.

Immune System Effects

Hassan Zahoor UI U., Khan Muhammad Zargham Z., Saleemi Muhammad Kashif K., Khan Ahrar, Javed Ijaz, Noreen Mnaza. Immunological responses of male White Leghorn chicks kept on ochratoxin A (OTA)-contaminated feed. *Journal of immunotoxicology*. 2012;9:56–63.

Hassan Zahoor, Khan Muhammad Zargham Z., Khan Ahrar, Javed Ijaz, Noreen Mnaza. In vivo and ex vivo phagocytic potential of macrophages from progeny of breeder hens kept on ochratoxin A (OTA)-contaminated diet. *Journal of immunotoxicology*. 2012;9:64–71.

UI-Hassan Zahoor, Khan Muhammad Zargham Z., Khan Ahrar, Javed Ijaz. Immunological status of the progeny of breeder hens kept on ochratoxin A (OTA)- and aflatoxin B(1) (AFB(1))-contaminated feeds. *Journal of immunotoxicology*. 2012;9:381–391.

Liu Jing, Wang Yuan, Cui Jinfeng, et al. Ochratoxin A induces oxidative DNA damage and G1 phase arrest in human peripheral blood mononuclear cells in vitro. *Toxicology letters*. 2012;211:164–171.

Hassan Zahoor, Khan Muhammad Zargham Z., Saleemi Muhammad Kashif K., Khan Ahrar, Javed Ijaz, Hussain Alamdar. Immunological status of White Leghorn chicks hatched from eggs inoculated with ochratoxin A (OTA). *Journal of immunotoxicology*. 2011;8:204–209.

Xue C. Y., Wang G. H., Chen F., Zhang X. B., Bi Y. Z., Cao Y. C.. Immunopathological effects of ochratoxin A and T-2 toxin combination on broilers. *Poultry science*. 2010;89:1162–1166.

Mwanza Mulunda, Kametler Lazlow, Bonai Alex, Rajli Veronika, Kovacs Melinda, Dutton Michael Francis F.. The cytotoxic effect of fumonisin B1 and ochratoxin A on human and pig lymphocytes using the Methyl Thiazol Tetrazolium (MTT) assay. *Mycotoxin research*. 2009;25:233–238.

Wang G. H., Xue C. Y., Chen F., et al. Effects of combinations of ochratoxin A and T-2 toxin on immune function of yellow-feathered broiler chickens. *Poultry science*. 2009;88:504–510.

Maenetje Pholo W., Villiers Neil, Dutton Mike F.. The use of isolated human lymphocytes in mycotoxin cytotoxicity testing. International journal of molecular sciences. 2008;9:1515–1526.

Rossiello Maria R., Rotunno Crescenzia, Coluccia Addolorata, et al. Ochratoxin A inhibits the production of tissue factor and plasminogen activator inhibitor-2 by human blood mononuclear cells: another potential mechanism of immune-suppression. Toxicology and applied pharmacology. 2008;229:227–231.

Odhav Bharti, Adam Jamila K., Bhoola Kanti D.. Modulating effects of fumonisin B1 and ochratoxin A on leukocytes and messenger cytokines of the human immune system. International immunopharmacology. 2008;8:799–809.

Ferrante M. C., Raso G. Mattace, Bilancione M., Esposito E., Iacono A., Meli R.. Differential modification of inflammatory enzymes in J774A.1 macrophages by ochratoxin A alone or in combination with lipopolysaccharide. Toxicology letters. 2008;181:40–46.

Ferrante Maria Carmela C., Bilancione Marcella, Raso Giuseppina Mattace M., et al. Expression of COX-2 and hsp72 in peritoneal macrophages after an acute ochratoxin A treatment in mice. Life sciences. 2006;79:1242–1247.

Al-Anati L., Petzinger E.. Immunotoxic activity of ochratoxin A. Journal of veterinary pharmacology and therapeutics. 2006;29:79–90.

Alvarez-Erviti L., Leache C., González-Peñas E., Cerain A. López. Alterations induced in vitro by ochratoxin A in rat lymphoid cells. Human & experimental toxicology. 2005;24:459–466.

Richetti Adriana, Cavallaro Antonia, Ainis Tommaso, Fimiani Vincenzo. Effect of mycotoxins on some activities of isolated human neutrophils. Immunopharmacology and immunotoxicology. 2005;27:433–446.

Müller Günter, Burkert Beate, Möller Uta, et al. Ochratoxin A and some of its derivatives modulate radical formation of porcine blood monocytes and granulocytes. Toxicology. 2004;199:251–259.

Verma J., Johri T. S., Swain B. K., Ameena S.. Effect of graded levels of aflatoxin, ochratoxin and their combinations on the performance and immune response of broilers. *British poultry science*. 2004;45:512–518.

Alvarez L., Gil A. G., Ezpeleta O., García-Jalón J. A., Cerain A.. Immunotoxic effects of Ochratoxin A in Wistar rats after oral administration. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2004;42:825–834.

Keblys Modestas, Bernhoft Aksel, Höfer Constance C., Morrison Ellen, Larsen Hans Jørgen J., Flåøyen Arne. The effects of the *Penicillium* mycotoxins citrinin, cyclopiazonic acid, ochratoxin A, patulin, penicillic acid, and roquefortine C on in vitro proliferation of porcine lymphocytes. *Mycopathologia*. 2004;158:317–324.

Assaf Hind, Azouri Hayat, Pallardy Marc. Ochratoxin A induces apoptosis in human lymphocytes through down regulation of Bcl-xL. *Toxicological sciences : an official journal of the Society of Toxicology*. 2004;79:335–344.

Lioi M. B., Santoro A., Barbieri R., Salzano S., Ursini M. V.. Ochratoxin A and zearalenone: a comparative study on genotoxic effects and cell death induced in bovine lymphocytes. *Mutation research*. 2004;557:19–27.

Bernhoft Aksel, Keblys Modestas, Morrison Ellen, Larsen Hans Jørgen J., Flåøyen Arne. Combined effects of selected *Penicillium* mycotoxins on in vitro proliferation of porcine lymphocytes. *Mycopathologia*. 2004;158:441–450.

Müller Günter, Rosner Heino, Rohrmann Barbara, et al. Effects of the mycotoxin ochratoxin A and some of its metabolites on the human cell line THP-1. *Toxicology*. 2003;184:69–82.

Köhler H., Heller M., Erler W., Müller G.. Effects of a long-term exposure with OTA or OTC on functions of a human monocytic cell line. *Mycotoxin research*. 2003;19:108–112.

Dönmez-Altuntas Hamiyet, Hamurcu Zuhal, Imamoglu Nalan, Liman Bilal Cem C.. Effects of ochratoxin A on micronucleus frequency in human lymphocytes. *Die Nahrung*. 2003;47:33–35.

Richetti Adriana, Cavallaro Antonia, Ainis Tommaso, Fimiani Vincenzo. Effect of some mycotoxins on superoxide anion production of isolated human neutrophils and in whole blood. *Immunopharmacology and immunotoxicology*. 2003;25:441–449.

Köhler H., Heller M., Erler W., Müller G., Rosner H., Gräfe U.. Effect of ochratoxin A and ochratoxin C on the monocyte and lymphocyte function. *Mycotoxin research*. 2002;18 Suppl 2:169–172.

Heller M., Rosner H., Burkert B., et al. [In vitro studies into the influence of ochratoxin A on the production of tumor necrosis factor alpha by the human monocytic cell line THP-1]. *DTW. Deutsche tierärztliche Wochenschrift*. 2002;109:200–205.

Nuntharatanapong N., Suramana T., Chaemthavorn S., et al. Increase in tumour necrosis factor-alpha and a change in the lactate dehydrogenase isoenzyme pattern in plasma of workers exposed to aflatoxin-contaminated feeds. *Arhiv za higijenu rada i toksikologiju*. 2001;52:291–298.

Müller G., Kielstein P., Rosner H., Berndt A., Heller M., Köhler H.. Studies of the influence of ochratoxin A on immune and defence reactions in weaners. *Mycoses*. 1999;42:495–505.

Müller G., Kielstein P., Rosner H., Berndt A., Heller M., Köhler H.. Studies on the influence of combined administration of ochratoxin A, fumonisin B1, deoxynivalenol and T2 toxin on immune and defence reactions in weaner pigs. *Mycoses*. 1999;42:485–493.

Charoenpornsook K., Fitzpatrick J. L., Smith J. E.. The effects of four mycotoxins on the mitogen stimulated proliferation of bovine peripheral blood mononuclear cells in vitro. *Mycopathologia*. 1998;143:105–111.

Verma R. J., Mathew S.. Alterations in total and differential counts of WBC during ochratoxicosis in rabbits. *Indian journal of experimental biology*. 1998;36:424–425.

Marin M. L., Murtha J., Dong W., Pestka J. J.. Effects of mycotoxins on cytokine production and proliferation in EL-4 thymoma cells. *Journal of toxicology and environmental health*. 1996;48:379–396.

Ueno Y., Umemori K., Niimi E., et al. Induction of apoptosis by T-2 toxin and other natural toxins in HL-60 human promyelotic leukemia cells. *Natural toxins.* 1995;3:129–137.

Størmer F. C., Lea T.. Effects of ochratoxin A upon early and late events in human T-cell proliferation. *Toxicology.* 1995;95:45–50.

Müller G., Kielstein P., Köhler H., Berndt A., Rosner H.. Studies of the influence of ochratoxin A on immune and defense reactions in the mouse model. *Mycoses.* 1995;38:85–91.

Thuvander A., Breitholtz-Emanuelsson A., Olsen M.. Effects of ochratoxin A on the mouse immune system after subchronic exposure. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 1995;33:1005–1011.

Harvey R. B., Elissalde M. H., Kubena L. F., Weaver E. A., Corrier D. E., Clement B. A.. Immunotoxicity of ochratoxin A to growing gilts. *American journal of veterinary research.* 1992;53:1966–1970.

Singh G. S., Chauhan H. V., Jha G. J., Singh K. K.. Immunosuppression due to chronic ochratoxicosis in broiler chicks. *Journal of comparative pathology.* 1990;103:399–410.

Pestka J. J., Bondy G. S.. Alteration of immune function following dietary mycotoxin exposure. *Canadian journal of physiology and pharmacology.* 1990;68:1009–1016.

Lea T., Steien K., Størmer F. C.. Mechanism of ochratoxin A-induced immunosuppression. *Mycopathologia.* 1989;107:153–159.

Holmberg T., Thuvander A., Hult K.. Ochratoxin A as a suppressor of mitogen-induced blastogenesis of porcine blood lymphocytes. *Acta veterinaria Scandinavica.* 1988;29:219–223.

Hong H. H., Jameson C. W., Boorman G. A.. Residual hematopoietic effect in mice exposed to ochratoxin A prior to irradiation. *Toxicology.* 1988;53:57–67.

Luster M. I., Germolec D. R., Burleson G. R., et al. Selective immunosuppression in mice of natural killer cell activity by ochratoxin A. *Cancer research.* 1987;47:2259–2263.

Dwivedi P., Burns R. B.. Immunosuppressive effects of ochratoxin A in young turkeys. Avian pathology : journal of the W.V.P.A. 1985;14:213–225.

Boorman G. A., Hong H. L., Dieter M. P., et al. Myelotoxicity and macrophage alteration in mice exposed to ochratoxin A. Toxicology and applied pharmacology. 1984;72:304–312.

Creppy E. E., Størmer F. C., Röschenhaller R., Dirheimer G.. Effects of two metabolites of ochratoxin A, (4R)-4-hydroxyochratoxin A and ochratoxin alpha, on immune response in mice. Infection and immunity. 1983;39:1015–1018.

Prior M. G., Sisodia C. S.. The effects of ochratoxin A on the immune response of Swiss mice. Canadian journal of comparative medicine. Revue canadienne de médecine comparée. 1982;46:91–96.

Effects on Pathogens

Kibugu J. K., Ngeranwa J. J., Makumi J. N., et al. Aggravation of pathogenesis mediated by ochratoxin A in mice infected with *Trypanosoma brucei rhodesiense*. Parasitology. 2009;136:273–281.

Gupta Sanjeev, Jindal Naresh, Khokhar Raj S., Asrani Rajesh K., Ledoux David R., Rottinghaus George E.. Individual and combined effects of ochratoxin A and *Salmonella enterica* serovar *Gallinarum* infection on pathological changes in broiler chickens. Avian pathology : journal of the W.V.P.A. 2008;37:265–272.

Koynarski V., Stoev S., Grozeva N., et al. Experimental coccidiosis provoked by *Eimeria acervulina* in chicks simultaneously fed on ochratoxin A contaminated diet. Research in veterinary science. 2007;82:225–231.

Gupta S., Jindal N., Khokhar R. S., Gupta A. K., Ledoux D. R., Rottinghaus G. E.. Effect of ochratoxin A on broiler chicks challenged with *Salmonella gallinarum*. British poultry science. 2005;46:443–450.

Kumar Arvind, Jindal Naresh, Shukla Chhote L., Asrani Rajesh K., Ledoux David R., Rottinghaus George E.. Pathological changes in broiler chickens fed ochratoxin A and

inoculated with Escherichia coli. Avian pathology : journal of the W.V.P.A. 2004;33:413–417.

Kumar A., Jindal N., Shukla C. L., Pal Yash, Ledoux D. R., Rottinghaus G. E.. Effect of ochratoxin A on Escherichia coli-challenged broiler chicks. Avian diseases. 2003;47:415–424.

Stoev S. D., Koynarsky V., Mantle P. G.. Clinicomorphological studies in chicks fed ochratoxin A while simultaneously developing coccidiosis. Veterinary research communications. 2002;26:189–204.

Stoev S. D., Goundsheva D., Mirtcheva T., Mantle P. G.. Susceptibility to secondary bacterial infections in growing pigs as an early response in ochratoxicosis. Experimental and toxicologic pathology. 2000;52:287–296.

Sandhu B. S., Singh B., Brar R. S.. Haematological and biochemical studies in broiler chicks fed ochratoxin and inoculated with inclusion body hepatitis virus, singly and in concurrence. Veterinary research communications. 1998;22:335–346.

Ali-Vehmas T., Rizzo A., Westermarck T., Atroshi F.. Measurement of antibacterial activities of T-2 toxin, deoxynivalenol, ochratoxin A, aflatoxin B1 and fumonisin B1 using microtitration tray-based turbidimetric techniques. Zentralblatt für Veterinärmedizin. Reihe A. 1998;45:453–458.

Fukata T., Sasai K., Baba E., Arakawa A.. Effect of ochratoxin A on Salmonella typhimurium-challenged layer chickens. Avian diseases. 1996;40:924–926.

Sandhu B. S., Singh H., Singh B.. Pathological studies in broiler chicks fed aflatoxin or ochratoxin and inoculated with inclusion body hepatitis virus singly and in concurrence. Veterinary research communications. 1995;19:27–37.

Elissalde M. H., Ziprin R. L., Huff W. E., Kubena L. F., Harvey R. B.. Effect of ochratoxin A on Salmonella-challenged broiler chicks. Poultry science. 1994;73:1241–1248.

Singh H., Singh B., Roy K. S., Singh B.. Histochemical/histoenzymic studies in broiler chicks fed aflatoxin, ochratoxin and inoculated with inclusion body hepatitis virus singly and in concurrence. Mycopathologia. 1994;125:119–128.

Gastrointestinal Effects

Cui Jinfeng, Liu Jing, Wu Sha, et al. Oxidative DNA damage is involved in ochratoxin A-induced G2 arrest through ataxia telangiectasia-mutated (ATM) pathways in human gastric epithelium GES-1 cells in vitro. *Archives of toxicology*. 2013.

Grenier Bertrand, Applegate Todd J.. Modulation of intestinal functions following mycotoxin ingestion: meta-analysis of published experiments in animals. *Toxins*. 2013;5:396–430.

Wang Yuan, Liu Jing, Cui Jinfeng, et al. ERK and p38 MAPK signaling pathways are involved in ochratoxin A-induced G2 phase arrest in human gastric epithelium cells. *Toxicology letters*. 2012;209:186–192.

Cui Jinfeng, Xing Lingxiao, Li Zengning, et al. Ochratoxin A induces G(2) phase arrest in human gastric epithelium GES-1 cells in vitro. *Toxicology letters*. 2010;193:152–158.

Maresca Marc, Yahi Nouara, Younès-Sakr Lama, Boyron Marilyn, Caporiccio Bertrand, Fantini Jacques. Both direct and indirect effects account for the pro-inflammatory activity of enteropathogenic mycotoxins on the human intestinal epithelium: stimulation of interleukin-8 secretion, potentiation of interleukin-1beta effect and increase in the transepithelial passage of commensal bacteria. *Toxicology and applied pharmacology*. 2008;228:84–92.

Ranaldi G., Mancini E., Ferruzza S., Sambuy Y., Perozzi G.. Effects of red wine on ochratoxin A toxicity in intestinal Caco-2/TC7 cells. *Toxicology in vitro : an international journal published in association with BIBRA*. 2007;21:204–210.

Sargent Thérèse, Garsou Serge, Schaut Annelore, et al. Differential modulation of ochratoxin A absorption across Caco-2 cells by dietary polyphenols, used at realistic intestinal concentrations. *Toxicology letters*. 2005;159:60–70.

McLaughlin John, Padfield Philip J., Burt Julian P., O'Neill Catherine A.. Ochratoxin A increases permeability through tight junctions by removal of specific claudin isoforms. *American journal of physiology. Cell physiology*. 2004;287.

Berger Valérie, Gabriel Anne-Françoise F., Sargent Thérèse, Trouet André, Larondelle Yvan, Schneider Yves-Jacques J.. Interaction of ochratoxin A with human intestinal

Caco-2 cells: possible implication of a multidrug resistance-associated protein (MRP2). *Toxicology letters.* 2003;140-141:465–476.

Maresca M., Mahfoud R., Pfohl-Leszkowicz A., Fantini J.. The mycotoxin ochratoxin A alters intestinal barrier and absorption functions but has no effect on chloride secretion. *Toxicology and applied pharmacology.* 2001;176:54–63.

Subramanian S., Balasubramanian N., William S., Govindasamy S.. In vivo absorption of 14C-glucose and 14C-glycine by the rat intestine during ochratoxin A toxicosis. *Biochemistry international.* 1991;23:655–661.

Kanisawa M., Suzuki S., Moroi K.. The mode of action of ochratoxin A in acute enteritis in rats. *Journal of environmental pathology, toxicology and oncology.* 1990;10:56–63.

Reproductive System Effects

Muñoz K., Wollin K. M., Kalhoff H., Degen G.. Zum Vorkommen des Mykotoxins Ochratoxin A in Muttermilchproben aus Deutschland Das Gesundheitswesen. 2013;75:194–197.

Verma Ramtej, Chakraborty Devjani. Emblica officinalis aqueous extract ameliorates ochratoxin-induced lipid peroxidation in the testis of mice. *Acta poloniae pharmaceutica.* 2008;65:187–194.

Biró Krisztina, Barna-Vetró Ildikó, Pécsi Tamás, et al. Evaluation of spermatological parameters in ochratoxin A-challenged boars. *Theriogenology.* 2003;60:199–207.

Gharbi A., Trillon O., Betbeder A. M., et al. Some effects of ochratoxin A, a mycotoxin contaminating feeds and food, on rat testis. *Toxicology.* 1993;83:9–18.

Diekman M. A., Green M. L.. Mycotoxins and reproduction in domestic livestock. *Journal of animal science.* 1992;70:1615–1627.

Fenske M., Fink-Gremmels J.. Effects of fungal metabolites on testosterone secretion in vitro. *Archives of toxicology.* 1990;64:72–75.

Gupta M., Bandyopadhyay S., Mazumdar S. K., Paul B.. Ovarian steroidogenesis in rats following ochratoxin A treatment. *Toxicology and applied pharmacology.* 1980;53:515–520.

Gupta M., Bandyopadhyay S., Paul B., Mazumdar S. K.. Onset of puberty and ovarian steroidogenesis following administration of ochratoxin A. *Endokrinologie.* 1980;75:292–298.

Moré J., Camguilhem R.. Effects of low doses of ochratoxin A after intratesticular injection in the rat. *Experientia.* 1979;35:890–892.

Paul B., Deb C., Banik S.. Testicular steroidogenesis in rats following ochratoxin A treatment. *Indian journal of experimental biology.* 1979;17:121–123.

Endocrine Effects

Frizzell C., Verhaegen S., Ropstad E., Elliott C. T., Connolly L.. Endocrine disrupting effects of ochratoxin A at the level of nuclear receptor activation and steroidogenesis. *Toxicology letters.* 2013;217:243–250.

Woo Chit Shing Jackson S., Wan Murphy Lam Yim L., Ahokas Jorma, El-Nezami Hani. Potential endocrine disrupting effect of ochratoxin A on human placental 3 β -hydroxysteroid dehydrogenase/isomerase in JEG-3 cells at levels relevant to human exposure. *Reproductive toxicology (Elmsford, N.Y.).* 2013;38:47–52.

Effects on Bones and Skin

Napoletano Margherita, Pennino Davide, Izzo Gaia, et al. Ochratoxin A induces craniofacial malformation in mice acting on Dlx5 gene expression. *Frontiers in bioscience (Elite edition).* 2010;2:133–142.

Yuki Takuo, Haratake Akinori, Koishikawa Hisa, Morita Kazumasa, Miyachi Yoshiki, Inoue Shintaro. Tight junction proteins in keratinocytes: localization and contribution to barrier function. *Experimental dermatology.* 2007;16:324–330.

Bulikowski Włodzimierz, Borzecki Andrzej, Skorupski Ryszard, Trocka Katarzyna, Lingas Wiesław. [Calcium concentration in the skin of male rats exposed to high doses of ochratoxin A (OTA)]. *Medycyna pracy.* 2005;56:363–366.

Duff S. R., Burns R. B., Dwivedi P.. Skeletal changes in broiler chicks and turkey poulets fed diets containing ochratoxin A. Research in veterinary science. 1987;43:301–307.

Huff W. E., Doerr J. A., Hamilton P. B., Hamann D. D., Peterson R. E., Ciegler A.. Evaluation of bone strength during aflatoxicosis and ochratoxicosis. Applied and environmental microbiology. 1980;40:102–107.

Blood Sugar Effects

Verma R. J., Shalini M.. Hyperglycemia induced in rabbits exposed to ochratoxin. Bulletin of environmental contamination and toxicology. 1998;60:626–631.

Zanić-Grubisić T., Zrinski R., Cepelak I., Petrik J., Pepelnjak S.. Ochratoxin A impairs activity of the membrane bound enzymes in rat pancreas. European journal of clinical chemistry and clinical biochemistry : journal of the Forum of European Clinical Chemistry Societies. 1995;33:699–704.

Respiratory Effects

Lieberman Seth M., Jacobs Joseph B., Lebowitz Richard A., Fitzgerald Matthew B., Crawford James, Feigenbaum Bernard A.. Measurement of mycotoxins in patients with chronic rhinosinusitis. Otolaryngology—head and neck surgery : official journal of American Academy of Otolaryngology-Head and Neck Surgery. 2011;145:327–329.

Cremer Birgit, Soja Alexandra, Sauer Jan-Alex A., Damm Michael. Pro-inflammatory effects of ochratoxin A on nasal epithelial cells. European archives of oto-rhino-laryngology. 2012;269:1155–1161.

Adipose Tissue Effects

Lim Seyoung, Jang Hyun-Jun J., Kim Jung Kuk K., et al. Ochratoxin A inhibits adipogenesis through the extracellular signal-related kinases-peroxisome proliferator-

activated receptor- γ pathway in human adipose tissue-derived mesenchymal stem cells. *Stem cells and development.* 2011;20:415–426.

Szkudelska K., Drzymańska H., Szkudelski T., Bukowska K., Nogowski L.. Lack of the effect of mycotoxins-aflatoxin B1 and ochratoxin A on some functions of rat adipocytes. *Toxicology in vitro : an international journal published in association with BIBRA.* 2005;19:771–777.

Endothelial Cell Effects

Kwan Hiu-Yee Y., Leung Pan-Cheung C., Huang Yu, Yao Xiaoqiang. Depletion of intracellular Ca²⁺ stores sensitizes the flow-induced Ca²⁺ influx in rat endothelial cells. *Circulation research.* 2003;92:286–292.

Human Serum Albumin Effects

Il'ichev Yuri V., Perry Jennifer L., Rüker Florian, Dockal Michael, Simon John D.. Interaction of ochratoxin A with human serum albumin. Binding sites localized by competitive interactions with the native protein and its recombinant fragments. *Chemico-biological interactions.* 2002;141:275–293.

Genotoxic Effects

Hibi Daisuke, Kijima Aki, Suzuki Yuta, et al. Effects of p53 knockout on ochratoxin A-induced genotoxicity in p53-deficient gpt delta mice. *Toxicology.* 2013;304:92–99.

Hibi Daisuke, Kijima Aki, Kuroda Ken, et al. Molecular mechanisms underlying ochratoxin A-induced genotoxicity: global gene expression analysis suggests induction of DNA double-strand breaks and cell cycle progression. *The Journal of toxicological sciences.* 2013;38:57–69.

Mutlu Ayse Gul G.. Increase in mitochondrial DNA copy number in response to ochratoxin A and methanol-induced mitochondrial DNA damage in *Drosophila*. *Bulletin of environmental contamination and toxicology*. 2012;89:1129–1132.

Hadjeba-Medjdoub Kheira, Tozlovanu Mariana, Pfohl-Leszkowicz Annie, Frenette Christine, Paugh Robert J., Manderville Richard A.. Structure-activity relationships imply different mechanisms of action for ochratoxin A-mediated cytotoxicity and genotoxicity. *Chemical research in toxicology*. 2012;25:181–190.

Ali Rahat, Mittelstaedt Roberta A., Shaddock Joseph G., et al. Comparative analysis of micronuclei and DNA damage induced by Ochratoxin A in two mammalian cell lines. *Mutation research*. 2011;723:58–64.

Lerda D., Biagi Bistoni M., Pelliccioni P., Litterio N.. Allium cepa as a biomonitor of ochratoxin A toxicity and genotoxicity. *Plant biology (Stuttgart, Germany)*. 2010;12:685–688.

Klarić Maja Segvić S., Darabos Dina, Rozgaj Ruzica, Kasuba Vilena, Pepelnjak Stjepan. Beauvericin and ochratoxin A genotoxicity evaluated using the alkaline comet assay: single and combined genotoxic action. *Archives of toxicology*. 2010;84:641–650.

Mantle Peter G., Faucet-Marquis Virginie, Manderville Richard A., Squillaci Bianca, Pfohl-Leszkowicz Annie. Structures of covalent adducts between DNA and ochratoxin a: a new factor in debate about genotoxicity and human risk assessment. *Chemical research in toxicology*. 2010;23:89–98.

Arbillaga Leire, Azqueta Amaia, Delft Joost H., Cerain Adela. In vitro gene expression data supporting a DNA non-reactive genotoxic mechanism for ochratoxin A. *Toxicology and applied pharmacology*. 2007;220:216–224.

Föllmann W., Behm C., Degen G. H.. Induction of micronuclei by ochratoxin A is a sensitive parameter of its genotoxicity in cultured cells. *Mycotoxin research*. 2007;23:101–109.

Tozlovanu Mariana, Faucet-Marquis Virginie, Pfohl-Leszkowicz Annie, Manderville Richard A.. Genotoxicity of the hydroquinone metabolite of ochratoxin A: structure-activity relationships for covalent DNA adduction. *Chemical research in toxicology*. 2006;19:1241–1247.

Mally Angela, Dekant Wolfgang. DNA adduct formation by ochratoxin A: review of the available evidence. *Food additives and contaminants.* 2005;22 Suppl 1:65–74.

Mally Angela, Pepe Gaetano, Ravoori Srivani, et al. Ochratoxin a causes DNA damage and cytogenetic effects but no DNA adducts in rats. *Chemical research in toxicology.* 2005;18:1253–1261.

Manderville Richard A.. A case for the genotoxicity of ochratoxin A by bioactivation and covalent DNA adduction. *Chemical research in toxicology.* 2005;18:1091–1097.

Degen G. H., Lebrun S., Lektarau Y., Föllmann W.. Modulation of ochratoxin A induced DNA-damage in urothelial cell cultures. *Mycotoxin research.* 2005;21:57–60.

Föllmann W., Lebrun S.. Repair of ochratoxin A-induced DNA damage and modulation of OTA-related genotoxicity by co-incubation with bile acids and methotrexatein vitro. *Mycotoxin research.* 2005;21:53–56.

Russo Alessandra, La Fauci Luca, Acquaviva Rosaria, et al. Ochratoxin A-induced DNA damage in human fibroblast: protective effect of cyanidin 3-O-beta-d-glucoside. *The Journal of nutritional biochemistry.* 2005;16:31–37.

Faucet Virginie, Pfohl-Leszkowicz Annie, Dai Jian, Castegnaro Marcel, Manderville Richard A.. Evidence for covalent DNA adduction by ochratoxin A following chronic exposure to rat and subacute exposure to pig. *Chemical research in toxicology.* 2004;17:1289–1296.

Föllmann Wolfram, Lucas Stefanie. Effects of the mycotoxin ochratoxin A in a bacterial and a mammalian in vitro mutagenicity test system. *Archives of toxicology.* 2003;77:298–304.

Lebrun Stefan, Föllmann Wolfram. Detection of ochratoxin A-induced DNA damage in MDCK cells by alkaline single cell gel electrophoresis (comet assay). *Archives of toxicology.* 2002;75:734–741.

Lebrun Stefan, Golka Klaus, Föllmann Wolfram, Schulze Harald. Is there an influence of enzyme polymorphisms on ochratoxin A genotoxicity? *Mycotoxin research.* 2002;18 Suppl 2:173–177.

Gautier J., Richoz J., Welti D. H., et al. Metabolism of ochratoxin A: absence of formation of genotoxic derivatives by human and rat enzymes. *Chemical research in toxicology*. 2001;14:34–45.

Obrecht-Pflumio S., Dirheimer G.. Horseradish peroxidase mediates DNA and deoxyguanosine 3'-monophosphate adduct formation in the presence of ochratoxin A. *Archives of toxicology*. 2001;75:583–590.

Obrecht-Pflumio S., Dirheimer G.. In vitro DNA and dGMP adducts formation caused by ochratoxin A. *Chemico-biological interactions*. 2000;127:29–44.

El Adlouni C., Pinelli E., Azémar B., Zaoui D., Beaune P., Pfohl-Leszkowicz A.. Phenobarbital increases DNA adduct and metabolites formed by ochratoxin A: role of CYP 2C9 and microsomal glutathione-S-transferase. *Environmental and molecular mutagenesis*. 2000;35:123–131.

Dörrenhaus A., Flieger A., Golka K., et al. Induction of unscheduled DNA synthesis in primary human urothelial cells by the mycotoxin ochratoxin A. *Toxicological sciences : an official journal of the Society of Toxicology*. 2000;53:271–277.

Pinelli E., El Adlouni C., Pipy B., Quartulli F., Pfohl-Leszkowicz A.. Roles of cyclooxygenase and lipoxygenases in ochratoxin A genotoxicity in human epithelial lung cells. *Environmental toxicology and pharmacology*. 1999;7:95–107.

Groene E. M., Jahn A., Horbach G. J., Fink-Gremmels J.. Mutagenicity and genotoxicity of the mycotoxin ochratoxin A. *Environmental toxicology and pharmacology*. 1996;1:21–26.

Pfohl-Leszkowicz A., Grosse Y., Kane A., Creppy E. E., Dirheimer G.. Differential DNA adduct formation and disappearance in three mouse tissues after treatment with the mycotoxin ochratoxin A. *Mutation research*. 1993;289:265–273.

Malaveille C., Brun G., Bartsch H.. Genotoxicity of ochratoxin A and structurally related compounds in *Escherichia coli* strains: studies on their mode of action. *IARC scientific publications*. 1991:261–266.

Pfohl-Leszkowicz A., Chakor K., Creppy E. E., Dirheimer G.. DNA adduct formation in mice treated with ochratoxin A. *IARC scientific publications*. 1991:245–253.

Stětina R., Votava M.. Induction of DNA single-strand breaks and DNA synthesis inhibition by patulin, ochratoxin A, citrinin, and aflatoxin B1 in cell lines CHO and AWRF. *Folia biologica.* 1986;32:128–144.

Bendele A. M., Neal S. B., Oberly T. J., et al. Evaluation of ochratoxin A for mutagenicity in a battery of bacterial and mammalian cell assays. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 1985;23:911–918.

Oxidative Stress & Glutathione

Tozlovanu Mariana, Canadas Delphine, Pfohl-Leszkowicz Annie, Frenette Christine, Paugh Robert J., Manderville Richard A.. Glutathione conjugates of ochratoxin A as biomarkers of exposure. *Arhiv za higijenu rada i toksikologiju.* 2012;63:417–427.

Cavin Christophe, Delatour Thierry, Marin-Kuan Maricel, et al. Ochratoxin A-mediated DNA and protein damage: roles of nitrosative and oxidative stresses. *Toxicological sciences : an official journal of the Society of Toxicology.* 2009;110:84–94.

Abdel-Wahhab Mosaad A., Abdel-Azim Sekena H., El-Nekeety Aziza A.. Inula crithmoides extract protects against ochratoxin A-induced oxidative stress, clastogenic and mutagenic alterations in male rats. *Toxicon.* 2008;52:566–573.

Hassen Wafa, Ayed-Boussema Imen, Bouslimi Amel, Bacha Hassen. Heat shock proteins (Hsp 70) response is not systematic to cell stress: case of the mycotoxin ochratoxin A. *Toxicology.* 2007;242:63–70.

Balogh K., Hausenblasz J., Weber Mária, Erdélyi Márta, Fodor Judit, Mézes M.. Effects of ochratoxin A on some production traits, lipid peroxide and glutathione redox status of weaned piglets. *Acta veterinaria Hungarica.* 2007;55:463–470.

Domijan Ana-Marija M., Peraica Maja, Vrdoljak Ana Lucić L., Radić Bozica, Zlender Vilim, Fuchs Radovan. The involvement of oxidative stress in ochratoxin A and fumonisin B1 toxicity in rats. *Molecular nutrition & food research.* 2007;51:1147–1151.

Palma Nieves, Cinelli Serena, Sapora Orazio, Wilson Samuel H., Dogliotti Eugenia. Ochratoxin A-induced mutagenesis in mammalian cells is consistent with the production of oxidative stress. *Chemical research in toxicology.* 2007;20:1031–1037.

Lebrun Stefan, Golka Klaus, Schulze Harald, Föllmann Wolfram. Glutathione S-transferase polymorphisms and ochratoxin A toxicity in primary human urothelial cells. *Toxicology.* 2006;224:81–90.

Kamp Hennicke G., Eisenbrand Gerhard, Schlatter Josef, Würth Kirsten, Janzowski Christine. Ochratoxin A: induction of (oxidative) DNA damage, cytotoxicity and apoptosis in mammalian cell lines and primary cells. *Toxicology.* 2005;206:413–425.

Gautier J. C., Holzhaeuser D., Markovic J., Gremaud E., Schilter B., Turesky R. J.. Oxidative damage and stress response from ochratoxin a exposure in rats. *Free radical biology & medicine.* 2001;30:1089–1098.

Hoehler D., Marquardt R. R., McIntosh A. R., Hatch G. M.. Induction of free radicals in hepatocytes, mitochondria and microsomes of rats by ochratoxin A and its analogs. *Biochimica et biophysica acta.* 1997;1357:225–233.

Hoehler D., Marquardt R. R., McIntosh A. R., Xiao H.. Free radical generation as induced by ochratoxin A and its analogs in bacteria (*Bacillus brevis*). *The Journal of biological chemistry.* 1996;271:27388–27394.

Omar R. F., Rahimtula A. D., Bartsch H.. Role of cytochrome P-450 in ochratoxin A-stimulated lipid peroxidation. *Journal of biochemical toxicology.* 1991;6:203–209.

Omar R. F., Hasinoff B. B., Mejilla F., Rahimtula A. D.. Mechanism of ochratoxin A stimulated lipid peroxidation. *Biochemical pharmacology.* 1990;40:1183–1191.

Rahimtula A. D., Béreziat J. C., Bussacchini-Griot V., Bartsch H.. Lipid peroxidation as a possible cause of ochratoxin A toxicity. *Biochemical pharmacology.* 1988;37:4469–4477.

Effects on Robustness and Growth

Pozzo L., Salamano G., Mellia E., et al. Feeding a diet contaminated with ochratoxin A for chickens at the maximum level recommended by the EU for poultry feeds (0.1 mg/kg). 1. Effects on growth and slaughter performance, haematological and serum traits. *Journal of animal physiology and animal nutrition.* 2013;97 Suppl 1:13–22.

Battacone Gianni, Nudda Anna, Pulina Giuseppe. Effects of ochratoxin a on livestock production. *Toxins.* 2010;2:1796–1824.

Elaroussi M. A., Mohamed F. R., El Barkouky E. M., Atta A. M., Abdou A. M., Hatab M. H.. Experimental ochratoxicosis in broiler chickens. *Avian pathology : journal of the W.V.P.A.* 2006;35:263–269.

Blank Ralf, Rolfs Jan-Peter P., Südekum Karl-Heinz H., Frohlich Andrew A., Marquardt Ronald R., Wolffram Siegfried. Effects of chronic ingestion of ochratoxin a on blood levels and excretion of the mycotoxin in sheep. *Journal of agricultural and food chemistry.* 2003;51:6899–6905.

Stoev S. D., Paskalev M., MacDonald S., Mantle P. G.. Experimental one year ochratoxin A toxicosis in pigs. *Experimental and toxicologic pathology.* 2002;53:481–487.

Biró Krisztina, Solti László, Barna-Vetró Ildikó, et al. Tissue distribution of ochratoxin A as determined by HPLC and ELISA and histopathological effects in chickens. *Avian pathology : journal of the W.V.P.A.* 2002;31:141–148.

Zofair S. M., Mathew S., Verma R. J.. Ochratoxin induced hemolysis in rabbits. *Indian journal of experimental biology.* 1996;34:592–593.

Harvey R. B., Kubena L. F., Elissalde M. H., Rottinghaus G. E., Corrier D. E.. Administration of ochratoxin A and T-2 toxin to growing swine. *American journal of veterinary research.* 1994;55:1757–1761.

Kozaczyński W.. Experimental ochratoxicosis A in chickens. Histopathological and histochemical study. *Archivum veterinarium Polonicum / Polish Academy of Sciences, Committee of Veterinary Sciences.* 1994;34:205–219.

Mráz A., Kosutzký J.. [Clinical effects and morphological changes after administration of low doses of ochratoxin A to broiler chicks]. *Veterinární medicína.* 1992;37:237–242.

Ayed I. A., Dafalla R., Yagi A. I., Adam S. E.. Effect on ochratoxin A on Lohmann-type chicks. Veterinary and human toxicology. 1991;33:557–560.

Kubena L. F., Harvey R. B., Huff W. E., Corrier D. E., Phillips T. D., Rottinghaus G. E.. Influence of ochratoxin A and T-2 toxin singly and in combination on broiler chickens. Poultry science. 1989;68:867–872.

Harvey R. B., Huff W. E., Kubena L. F., Phillips T. D.. Evaluation of diets contaminated with aflatoxin and ochratoxin fed to growing pigs. American journal of veterinary research. 1989;50:1400–1405.

Kubena L. F., Huff W. E., Harvey R. B., Corrier D. E., Phillips T. D., Creger C. R.. Influence of ochratoxin A and deoxynivalenol on growing broiler chicks. Poultry science. 1988;67:253–260.

Brownie C. F., Brownie C.. Preliminary study on serum enzyme changes in Long Evans rats given parenteral ochratoxin A, aflatoxin B1 and their combination. Veterinary and human toxicology. 1988;30:211–214.

Huff W. E., Kubena L. F., Harvey R. B.. Progression of ochratoxicosis in broiler chickens. Poultry science. 1988;67:1139–1146.

Albassam M. A., Yong S. I., Bhatnagar R., Sharma A. K., Prior M. G.. Histopathologic and electron microscopic studies on the acute toxicity of ochratoxin A in rats. Veterinary pathology. 1987;24:427–435.

Cook W. O., Osweiler G. D., Anderson T. D., Richard J. L.. Ochratoxicosis in Iowa swine. Journal of the American Veterinary Medical Association. 1986;188:1399–1402.

Hayes A. W., Cain J. A., Moore B. G.. Effect of aflatoxin B1, ochratoxin A and rubratoxin B on infant rats. Food and cosmetics toxicology. 1977;15:23–27.

Szczech G. M., Carlton W. W., Tuite J., Caldwell R.. Ochratoxin A toxicosis in swine. Veterinary pathology. 1973;10:347–364.

Szczech G. M.. Ochratoxicosis in Beagle dogs. Veterinary pathology. 1975;12:66–67.

Szczech G. M., Carlton W. W., Tuite J.. Ochratoxicosis in Beagle dogs. II. Pathology. Veterinary pathology. 1973;10:219–231.

Szczecz G. M., Carlton W. W., Tuite J.. Ochratoxosis in Beagle dogs. I. Clinical and clinicopathological features. *Veterinary pathology*. 1973;10:135–154.

Purchase I. F., Watt J. J.. The long-term toxicity of Ochratoxin A to rats. *Food and cosmetics toxicology*. 1971;9:681–682.

Moore J. H., Truelove B.. Ochratoxin A: inhibition of mitochondrial respiration. *Science (New York, N.Y.)*. 1970;168:1102–1103.

Purchase I. F., Theron J. J.. The acute toxicity of ochratoxin A to rats. *Food and cosmetics toxicology*. 1968;6:479–483.

Human Population Levels & Risk Assessment

Giuseppe Romina, Bertuzzi Terenzio, Rossi Filippo, et al. Plasma ochratoxin A levels, food consumption, and risk biomarkers of a representative sample of men and women from the Molise region in Italy. *European journal of nutrition*. 2012;51:851–860.

Haighton Lois A., Lynch Barry S., Magnuson Bernadene A., Nestmann Earle R.. A reassessment of risk associated with dietary intake of ochratoxin A based on a lifetime exposure model. *Critical reviews in toxicology*. 2012;42:147–168.

Coronel M. B., Marin S., Tarragó M., Cano-Sancho G., Ramos A. J., Sanchis V.. Ochratoxin A and its metabolite ochratoxin alpha in urine and assessment of the exposure of inhabitants of Lleida, Spain. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2011;49:1436–1442.

Coronel M. B., Sanchis V., Ramos A. J., Marin S.. Ochratoxin A in adult population of Lleida, Spain: presence in blood plasma and consumption in different regions and seasons. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2011;49:2697–2705.

Duarte S., Bento J., Pena A., et al. Monitoring of ochratoxin A exposure of the Portuguese population through a nationwide urine survey–Winter 2007. *The Science of the total environment*. 2010;408:1195–1198.

Erkekoğlu Pinar, Sabuncuoğlu Suna, Aydin Sevtap, Sahin Gönül, Giray Belma. Determination of seasonal variations in serum ochratoxin A levels in healthy population living in some regions of Turkey by enzyme-linked immunosorbent assay. *Toxicon*. 2010;55:507–513.

Reddy Lalini, Bhoola Kanti. Ochratoxins-food contaminants: impact on human health. *Toxins*. 2010;2:771–779.

Karima Hmaissia-Khlifa K., Ridha Ghali, Zied Aouni, Chekib Mazigh, Salem Machgoul, Abderrazek Hedhili. Estimation of Ochratoxin A in human blood of healthy Tunisian population. *Experimental and toxicologic pathology*. 2010;62:539–542.

Kuiper-Goodman T., Hilts C., Billiard S. M., Kiparissis Y., Richard I. D., Hayward S.. Health risk assessment of ochratoxin A for all age-sex strata in a market economy. Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment. 2010;27:212–240.

Coronel M. B., Sanchis V., Ramos A. J., Marin S.. Review. Ochratoxin A: presence in human plasma and intake estimation. *Food science and technology international = Ciencia y tecnología de los alimentos internacional*. 2010;16:5–18.

Medina A., Mateo E. M., Roig R. J., Blanquer A., Jiménez M.. Ochratoxin A levels in the plasma of healthy blood donors from Valencia and estimation of exposure degree: comparison with previous national Spanish data. Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment. 2010;27:1273–1284.

Duarte Sofia C., Pena Angelina, Lino Celeste M.. Ochratoxin a in Portugal: a review to assess human exposure. *Toxins*. 2010;2:1225–1249.

Märtlbauer Erwin, Usleber Ewald, Dietrich Richard, Schneider Elisabeth. Ochratoxin A in human blood serum - retrospective long-term data. *Mycotoxin research*. 2009;25:175–186.

Duarte S. C., Bento J. M., Pena A., Lino C. M.. Ochratoxin A exposure assessment of the inhabitants of Lisbon during winter 2007/2008 through bread and urine analysis. Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment. 2009;26:1411–1420.

Goliński P., Waśkiewicz A., Gromadzka K.. Mycotoxins and mycotoxicoses under climatic conditions of Poland. Polish journal of veterinary sciences. 2009;12:581–588.

Lino C. M., Baeta M. L., Henri M., Dinis A. M., Pena A. S., Silveira M. I.. Levels of ochratoxin A in serum from urban and rural Portuguese populations and estimation of exposure degree. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2008;46:879–885.

Bayman Paul, Baker James L.. Ochratoxins: a global perspective. Mycopathologia. 2006;162:215–223.

Sangare-Tigori Béatrice, Moukha Serge, Kouadio James H., et al. Ochratoxin A in human blood in Abidjan, Côte d'Ivoire. Toxicon. 2006;47:894–900.

Muñoz Katherine, Vega Mario, Rios Gisela, Muñoz Sara, Madariaga Ricardo. Preliminary study of Ochratoxin A in human plasma in agricultural zones of Chile and its relation to food consumption. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2006;44:1884–1889.

Pena A., Seifertová M., Lino C., Silveira I., Solich P.. Estimation of ochratoxin A in portuguese population: new data on the occurrence in human urine by high performance liquid chromatography with fluorescence detection. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2006;44:1449–1454.

Creppy Edmond E., Moukha Serge, Bacha Hassen, Carratu Maria Rosaria R.. How much should we involve genetic and environmental factors in the risk assessment of mycotoxins in humans? International journal of environmental research and public health. 2005;2:186–193.

Fazekas B., Tar Andrea, Kovács Melinda. Ochratoxin a content of urine samples of healthy humans in Hungary. Acta veterinaria Hungarica. 2005;53:35–44.

Malíř F., Ostrý V., Cerná M., et al. [Monitoring the important mycotoxin biomarkers (ochratoxin A, aflatoxin M1) in the Czech population]. Casopís lékařů českých. 2004;143:691–696.

Assaf Hind, Betbeder Anne-Marie M., Creppy Edmond E., Pallardy Marc, Azouri Hayat. Ochratoxin A levels in human plasma and foods in Lebanon. *Human & experimental toxicology*. 2004;23:495–501.

Degen G. H., Blaskewicz M., Lektarau Y., Grüner C.. [Ochratoxin a analyses of blood samples from workers at waste handling facilities]. *Mycotoxin research*. 2003;19:3–7.

Engelhardt G., Kibler R., Verwied-Jorky S., Koletzko B.. The daily dietary intake of ochratoxin a - Results of a duplicate portion study with Bavarian schoolchildren. *Mycotoxin research*. 2003;19:8–12.

Skaug Marit Aralt A.. Levels of ochratoxin A and IgG against conidia of *Penicillium verrucosum* in blood samples from healthy farm workers. *Annals of agricultural and environmental medicine : AAEM*. 2003;10:73–77.

Iavicoli Ivo, Brera Carlo, Carelli Giovanni, Caputi Rosamaria, Marinaccio Alessandro, Miraglia Marina. External and internal dose in subjects occupationally exposed to ochratoxin A. *International archives of occupational and environmental health*. 2002;75:381–386.

Filali A., Betbeder A. M., Baudrimont I., Benayad A., Soulaymani R., Creppy E. E.. Ochratoxin A in human plasma in Morocco: a preliminary survey. *Human & experimental toxicology*. 2002;21:241–245.

Thuvander A., Paulsen J. E., Axberg K., et al. Levels of ochratoxin A in blood from Norwegian and Swedish blood donors and their possible correlation with food consumption. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2001;39:1145–1151.

Domijan A. M., Peraica M., Fuchs R., et al. Ochratoxin A in blood of healthy population in Zagreb. *Arhiv za higijenu rada i toksikologiju*. 1999;50:263–271.

Fink-Gremmels J.. Mycotoxins: their implications for human and animal health. *The Veterinary quarterly*. 1999;21:115–120.

Peraica M., Domijan A. M., Fuchs R., Lucić A., Radić B.. The occurrence of ochratoxin A in blood in general population of Croatia. *Toxicology letters*. 1999;110:105–112.

Ueno Y., Maki S., Lin J., Furuya M., Sugiura Y., Kawamura O.. A 4-year study of plasma ochratoxin A in a selected population in Tokyo by immunoassay and immunoaffinity column-linked HPLC. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 1998;36:445–449.

Scott P. M., Kanhere S. R., Lau B. P., et al. Survey of Canadian human blood plasma for ochratoxin A. *Food additives and contaminants.* 1998;15:555–562.

Kovács F., Sándor G., Ványi A., Domány S., Zomborszky-Kovács M.. Detection of ochratoxin a in human blood and colostrum. *Acta veterinaria Hungarica.* 1995;43:393–400.

Ruprich J., Ostrý V.. Study of human exposure to ochratoxin A and assessment of possible sources. *Central European journal of public health.* 1993;1:46–48.

Ruprich J., Ostrý V.. Health risk assessment of the mycotoxin ochratoxin A to humans: Czech Republic–Brno–1991/92. *Central European journal of public health.* 1993;1:86–93.

Creppy E. E., Betbeder A. M., Gharbi A., et al. Human ochratoxicosis in France. *IARC scientific publications.* 1991:145–151.

Hald B.. Ochratoxin A in human blood in European countries. *IARC scientific publications.* 1991:159–164.

Fukal L., Reisnerova H.. Monitoring of aflatoxins and ochratoxin A in Czechoslovak human sera by immunoassay. *Bulletin of environmental contamination and toxicology.* 1990;44:345–349.

Toxicokinetics

Corcuera L. A., Vettorazzi A., Arbillaga L., González-Peñas E., Cerain A.. An approach to the toxicity and toxicokinetics of aflatoxin B1 and ochratoxin A after simultaneous oral administration to fasted F344 rats. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 2012;50:3440–3446.

Wu Qinghua, Dohnal Vlastimil, Huang Lingli, et al. Metabolic pathways of ochratoxin A. Current drug metabolism. 2011;12:1–10.

Vettorazzi A., Trocóniz I. F., Gonzalez-Peñas E., et al. Effects of fasting and gender on ochratoxin A toxicokinetics in F344 rats. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2010;48:3159–3166.

Vettorazzi A., Gonzalez-Peñas E., Trocóniz I. F., et al. A different kinetic profile of ochratoxin A in mature male rats. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2009;47:1921–1927.

Mantle Peter G.. Interpretation of the pharmacokinetics of ochratoxin A in blood plasma of rats, during and after acute or chronic ingestion. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2008;46:1808–1816.

Ringot Diana, Chango Abalo, Schneider Yves-Jacques J., Larondelle Yvan. Toxicokinetics and toxicodynamics of ochratoxin A, an update. Chemico-biological interactions. 2006;159:18–46.

Scott Peter M.. Biomarkers of human exposure to ochratoxin A. Food additives and contaminants. 2005;22 Suppl 1:99–107.

Dietrich Daniel R., Heussner Alexandra H., O'Brien Evelyn. Ochratoxin A: comparative pharmacokinetics and toxicological implications (experimental and domestic animals and humans). Food additives and contaminants. 2005;22 Suppl 1:45–52.

Simarro Doorten A. Y., Bull S., Doelen M. A., Fink-Gremmels J.. Metabolism-mediated cytotoxicity of ochratoxin A. Toxicology in vitro : an international journal published in association with BIBRA. 2004;18:271–277.

Dai Jian, Park Gyungse, Perry Jennifer L., et al. Molecular aspects of the transport and toxicity of ochratoxin a. Accounts of chemical research. 2004;37:874–881.

Zepnik H., Völkel W., Dekant W.. Metabolism and toxicokinetics of the mycotoxin ochratoxin A in F344 rats. Mycotoxin research. 2003;19:102–107.

Zepnik Herbert, Völkel Wolfgang, Dekant Wolfgang. Toxicokinetics of the mycotoxin ochratoxin A in F 344 rats after oral administration. *Toxicology and applied pharmacology*. 2003;192:36–44.

Babu Ellappan, Takeda Michio, Narikawa Shinichi, et al. Role of human organic anion transporter 4 in the transport of ochratoxin A. *Biochimica et biophysica acta*. 2002;1590:64–75.

Dortant P. M., Peters-Volleberg G. W., Van Loveren H., Marquardt R. R., Speijers G. J.. Age-related differences in the toxicity of ochratoxin A in female rats. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2001;39:55–65.

Stander M. A., Nieuwoudt T. W., Steyn P. S., Shephard G. S., Creppy E. E., Sewram V.. Toxicokinetics of ochratoxin A in vervet monkeys (*Cercopithecus aethiops*). *Archives of toxicology*. 2001;75:262–269.

Müller H. M., Lerch C., Müller K., Eggert W.. Kinetic profiles of ochratoxin A and ochratoxin alpha during in vitro incubation in buffered forestomach and abomasal contents from cows. *Natural toxins*. 1998;6:251–258.

Xiao H., Madhyastha S., Marquardt R. R., et al. Toxicity of ochratoxin A, its opened lactone form and several of its analogs: structure-activity relationships. *Toxicology and applied pharmacology*. 1996;137:182–192.

Fink-Gremmels J., Jahn A., Blom M. J.. Toxicity and metabolism of ochratoxin A. *Natural toxins*. 1995;3.

Fuchs R., Hult K.. Ochratoxin A in blood and its pharmacokinetic properties. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1992;30:201–204.

Combined Mycotoxins

Klarić Maja. Adverse effects of combined mycotoxins. *Arhiv za higijenu rada i toksikologiju*. 2012;63:519–530.

Creppy Edmond E., Chiarappa Patrizia, Baudrimont Isabelle, Borracci Pietro, Moukha Serge, Carratù Maria R.. Synergistic effects of fumonisin B1 and ochratoxin A: are in vitro cytotoxicity data predictive of in vivo acute toxicity? *Toxicology.* 2004;201:115–123.

Inhaled Ochratoxin

Polizzi Viviana, Delmulle Barbara, Adams An, et al. JEM Spotlight: Fungi, mycotoxins and microbial volatile organic compounds in mouldy interiors from water-damaged buildings. *Journal of environmental monitoring : JEM.* 2009;11:1849–1858.

Richard J. L., Plattner R. D., May J., Liska S. L.. The occurrence of ochratoxin A in dust collected from a problem household. *Mycopathologia.* 1999;146:99–103.

Ochratoxin in Food

Lee Tien Ping P., Saad Bahruddin, Khayoon Wejdan Shakir S., Salleh Baharuddin. Molecularly imprinted polymer as sorbent in micro-solid phase extraction of ochratoxin A in coffee, grape juice and urine. *Talanta.* 2012;88:129–135.

Coronel M. B., Marín S., Cano-Sancho G., Ramos A. J., Sanchis V.. Exposure assessment to ochratoxin A in Catalonia (Spain) based on the consumption of cereals, nuts, coffee, wine, and beer. *Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment.* 2012;29:979–993.

Ravelo Abreu A., Rubio Armendáriz C., Gutiérrez Fernández A. J., Torre A.. [Ochratoxin A in foods for human consumption: review]. *Nutrición hospitalaria.* 2011;26:1215–1226.

Muñoz Katherine, Vega Mario, Rios Gisela, Geisen Rolf, Degen Gisela H.. Mycotoxin production by different ochratoxigenic *Aspergillus* and *Penicillium* species on coffee- and wheat-based media. *Mycotoxin research.* 2011;27:239–247.

Aoyama Koji, Nakajima Masahiro, Tabata Setsuko, et al. Four-year surveillance for ochratoxin a and fumonisins in retail foods in Japan. *Journal of food protection.* 2010;73:344–352.

Tozlovanu Mariana, Pfohl-Leszkowicz Annie. Ochratoxin A in roasted coffee from French supermarkets and transfer in coffee beverages: comparison of analysis methods. *Toxins.* 2010;2:1928–1942.

Kuiper-Goodman T, Hilts C, Billiard SM, Kiparissis Y, Richard ID, Hayward S. Health risk assessment of ochratoxin A for all age-sex strata in a market economy. *Food Addit Contam Part A Chem Anal Control Expo Risk Assess.* 2010 Feb;27(2):212-40.

Coronel M. B., Sanchis V., Ramos A. J., Marin S.. Assessment of the exposure to ochratoxin A in the province of Lleida, Spain. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association.* 2009;47:2847–2852.

Napolitano Aurora, Fogliano Vincenzo, Tafuri Alessio, Ritieni Alberto. Natural occurrence of ochratoxin A and antioxidant activities of green and roasted coffees and corresponding byproducts. *Journal of agricultural and food chemistry.* 2007;55:10499–10504.

Sugita-Konishi Yoshiko, Nakajima Masahiro, Tabata Setsuko, et al. Occurrence of aflatoxins, ochratoxin A, and fumonisins in retail foods in Japan. *Journal of food protection.* 2006;69:1365–1370.

Treatment & Prevention Strategies

Denli Muzaffer, Perez Jose F.. Ochratoxins in feed, a risk for animal and human health: control strategies. *Toxins.* 2010;2:1065–1077.

Varga János, Kocsbá Sándor, Péteri Zsanett, Vágvölgyi Csaba, Tóth Beáta. Chemical, physical and biological approaches to prevent ochratoxin induced toxicoses in humans and animals. *Toxins.* 2010;2:1718–1750.

Omar R. F., Gelboin H. V., Rahimtula A. D.. Effect of cytochrome P450 induction on the metabolism and toxicity of ochratoxin A. *Biochemical pharmacology.* 1996;51:207–216.

Probiotic Bacteria

Mechoud Mónica A., Juarez Guillermo E., Valdez Graciela Font F., Rodriguez Ana V.. Lactobacillus reuteri CRL 1098 and Lactobacillus acidophilus CRL 1014 differently reduce in vitro immunotoxic effect induced by Ochratoxin A. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2012;50:4310–4315.

[] Mobashar Muhammad, Hummel Jürgen, Blank Ralf, Südekum Karl-Heinz H.. Ochratoxin A in ruminants—A review on its degradation by gut microbes and effects on animals. Toxins. 2010;2:809–839.

Kabak Bulent, Brandon Esther F., Var Isil, Blokland Marco, Sips Adrienne J.. Effects of probiotic bacteria on the bioaccessibility of aflatoxin B(1) and ochratoxin A using an in vitro digestion model under fed conditions. Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes. 2009;44:472–480.

Fuchs S., Sontag G., Stidl R., Ehrlich V., Kundi M., Knasmüller S.. Detoxification of patulin and ochratoxin A, two abundant mycotoxins, by lactic acid bacteria. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2008;46:1398–1407.

Ezz El-Arab Aly M., Girgis Shenouda M., Hegazy Eman M., Abd El-Khalek Azzat B.. Effect of dietary honey on intestinal microflora and toxicity of mycotoxins in mice. BMC complementary and alternative medicine. 2006;6.

Schrickx Jan, Lektarau Yuri, Fink-Gremmels J.. Ochratoxin A secretion by ATP-dependent membrane transporters in Caco-2 cells. Archives of toxicology. 2006;80:243–249.

Biernasiak J., Piotrowska M., Libudzisz Z.. Detoxification of mycotoxins by probiotic preparation for broiler chickens. Mycotoxin research. 2006;22:230–235.

Schatzmayr Gerd, Zehner Florian, Täubel Martin, et al. Microbiologicals for deactivating mycotoxins. Molecular nutrition & food research. 2006;50:543–551.

Piotrowska Mańgorzata, Zakowska Zofia. The elimination of ochratoxin A by lactic acid bacteria strains. Polish journal of microbiology / Polskie Towarzystwo Mikrobiologów = The Polish Society of Microbiologists. 2005;54:279–286.

Agawane S. B., Lonkar P. S.. Effect of probiotic containing *Saccharomyces boulardii* on experimental ochratoxicosis in broilers: hematobiochemical studies. Journal of veterinary science. 2004;5:359–367.

Turbic A., Ahokas J. T., Haskard C. A.. Selective in vitro binding of dietary mutagens, individually or in combination, by lactic acid bacteria. Food additives and contaminants. 2002;19:144–152.

Schatzmayr G., Heidler D., Fuchs E., Binder E. M., Loibner A. P., Braun R.. Evidence of ochratoxin A-detoxification activity of rumen fluid, intestinal fluid and soil samples as well as isolation of relevant microorganisms from these environments. Mycotoxin research. 2002;18 Suppl 2:183–187.

Müller H. M., Müller K., Steingass H.. Effect of feeding regime on the metabolism of ochratoxin A during the in vitro incubation in buffered rumen fluid from cows. Archiv für Tierernährung. 2001;54:265–279.

Böhm J., Grajewski J., Asperger H., Cecon B., Rabus B., Razzazi E.. Study on biodegradation of some A- and B-trichothecenes and ochratoxin A by use of probiotic microorganisms. Mycotoxin research. 2000;16 Suppl 1:70–74.

Ozpinar H., Augonyte G., Drochner W.. Inactivation of ochratoxin in ruminal fluid with variation of pH-value and fermentation parameters in an in vitro system. Environmental toxicology and pharmacology. 1999;7:1–9.

Skrinjar M., Rasić J. L., Stojićić V.. Lowering of ochratoxin A level in milk by yoghurt bacteria and bifidobacteria. Folia microbiologica. 1996;41:26–28.

Madhyastha M. S., Marquardt R. R., Frohlich A. A.. Hydrolysis of ochratoxin A by the microbial activity of digesta in the gastrointestinal tract of rats. Archives of environmental contamination and toxicology. 1992;23:468–472.

Galtier P., Alvinerie M.. In vitro transformation of ochratoxin A by animal microbial floras. Annales de recherches vétérinaires. Annals of veterinary research. 1976;7:91–98.

Binders

Firmin S., Gandia P., Morgavi D. P., et al. Modification of aflatoxin B1 and ochratoxin A toxicokinetics in rats administered a yeast cell wall preparation. Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment. 2010;27:1153–1160.

Aoudia N., Tangni E. K., Larondelle Y.. Distribution of ochratoxin A in plasma and tissues of rats fed a naturally contaminated diet amended with micronized wheat fibres: effectiveness of mycotoxin sequestering activity. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association. 2008;46:871–878.

Denli M., Blandon J. C., Guynot M. E., Salado S., Perez J. F.. Efficacy of a new ochratoxin-binding agent (OcraTox) to counteract the deleterious effects of ochratoxin A in laying hens. Poultry science. 2008;87:2266–2272.

Hanif N. Q., Muhammad G., Siddique M., et al. Clinico-pathomorphological, serum biochemical and histological studies in broilers fed ochratoxin A and a toxin deactivator (Mycofix Plus). British poultry science. 2008;49:632–642.

Bursian S. J., Mitchell R. R., Yamini B., et al. Efficacy of a commercial mycotoxin binder in alleviating effects of ochratoxin A, fumonisin B1, moniliformin and zearalenone in adult mink. Veterinary and human toxicology. 2004;46:122–129.

García A. R., Avila E., Rosiles R., Petrone V. M.. Evaluation of two mycotoxin binders to reduce toxicity of broiler diets containing ochratoxin A and T-2 toxin contaminated grain. Avian diseases. 2003;47:691–699.

Aravind K. L., Patil V. S., Devegowda G., Umakantha B., Ganpule S. P.. Efficacy of esterified glucomannan to counteract mycotoxicosis in naturally contaminated feed on performance and serum biochemical and hematological parameters in broilers. Poultry science. 2003;82:571–576.

Stoev Stoycho D., Djuvinov Dimcho, Mirtcheva Teodora, Pavlov Dimitar, Mantle Peter. Studies on some feed additives giving partial protection against ochratoxin A toxicity in chicks. *Toxicology letters*. 2002;135:33–50.

Raju M. V., Devegowda G.. Influence of esterified-glucomannan on performance and organ morphology, serum biochemistry and haematology in broilers exposed to individual and combined mycotoxicosis (aflatoxin, ochratoxin and T-2 toxin). *British poultry science*. 2000;41:640–650.

Kerkadi A., Barriault C., Marquardt R. R., et al. Cholestyramine protection against ochratoxin A toxicity: role of ochratoxin A sorption by the resin and bile acid enterohepatic circulation. *Journal of food protection*. 1999;62:1461–1465.

Madhyastha M. S., Frohlich A. A., Marquardt R. R.. Effect of dietary cholestyramine on the elimination pattern of ochratoxin A in rats. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1992;30:709–714.

Rotter R. G., Frohlich A. A., Marquardt R. R.. Influence of dietary charcoal on ochratoxin A toxicity in Leghorn chicks. *Canadian journal of veterinary research = Revue canadienne de recherche vétérinaire*. 1989;53:449–453.

Roth A., Chakor K., Creppy E. E., Kane A., Roschenthaler R., Dirheimer G.. Evidence for an enterohepatic circulation of ochratoxin A in mice. *Toxicology*. 1988;48:293–308.

Drugs & Supplements

Khatoon Aisha, Zargham Khan Muhammad, Khan Ahrar, Saleemi Muhammad Kashif K., Javed Ijaz. Amelioration of Ochratoxin A-induced immunotoxic effects by silymarin and Vitamin E in White Leghorn cockerels. *Journal of immunotoxicology*. 2013;10:25–31.

Palabiyik Sezin S., Erkekoglu Pinar, Zeybek N. Dilara, et al. Protective effect of lycopene against ochratoxin A induced renal oxidative stress and apoptosis in rats. *Experimental and toxicologic pathology*. 2013;65:853–861.

Zheng Juanjuan, Zhang Yu, Xu Wentao, et al. Zinc protects HepG2 cells against the oxidative damage and DNA damage induced by ochratoxin A. *Toxicology and applied pharmacology.* 2013;268:123–131.

Poór Miklós, Kunsági-Máté Sándor, Bencsik Tímea, Petrik József, Vladimir-Knežević Sanda, Kőszegi Tamás. Flavonoid aglycones can compete with Ochratoxin A for human serum albumin: a new possible mode of action. *International journal of biological macromolecules.* 2012;51:279–283.

Malekinejad Hassan, Mirzakhani Navideh, Razi Mazdak, Cheraghi Hadi, Alizadeh Arash, Dardmeh Fereshteh. Protective effects of melatonin and Glycyrrhiza glabra extract on ochratoxin A-induced damages on testes in mature rats. *Human & experimental toxicology.* 2011;30:110–123.

Madrigal-Santillán Eduardo, Morales-González José A., Vargas-Mendoza Nancy, et al. Antigenotoxic studies of different substances to reduce the DNA damage induced by aflatoxin B(1) and ochratoxin A. *Toxins.* 2010;2:738–757.

Yenilmez Aydin, Isikli Burhanettin, Aral Erinc, Degirmenci Irfan, Sutken Emine, Baycu Cengiz. Antioxidant effects of melatonin and coenzyme Q10 on oxidative damage caused by single-dose ochratoxin A in rat kidney. *The Chinese journal of physiology.* 2010;53:310–317.

Fusi Eleonora, Rebucci Raffaella, Pecorini Chiara, et al. Alpha-tocopherol counteracts the cytotoxicity induced by ochratoxin a in primary porcine fibroblasts. *Toxins.* 2010;2:1265–1278.

Al-Anati Lauy, Essid Ebtisam, Reinehr Roland, Petzinger Ernst. Silibinin protects OTA-mediated TNF-alpha release from perfused rat livers and isolated rat Kupffer cells. *Molecular nutrition & food research.* 2009;53:460–466.

Ranaldi G., Caprini V., Sambuy Y., Perozzi G., Murgia C.. Intracellular zinc stores protect the intestinal epithelium from Ochratoxin A toxicity. *Toxicology in vitro : an international journal published in association with BIBRA.* 2009;23:1516–1521.

Fusi E., Rebucci R., Pecorini C., Rossi L., D'Ambrosio F., Baldi A.. Evaluation of the damage induced by ochratoxin A and the protective role of alpha-tocopherol in cultured bovine mammary epithelial cells. *Veterinary research communications.* 2008;32 Suppl 1.

Cavin Christophe, Delatour Thierry, Marin-Kuan Maricel, et al. Reduction in antioxidant defenses may contribute to ochratoxin A toxicity and carcinogenicity. *Toxicological sciences : an official journal of the Society of Toxicology.* 2007;96:30–39.

Di Giacomo Claudia, Acquaviva Rosaria, Piva Andrea, et al. Protective effect of cyanidin 3-O-beta-D-glucoside on ochratoxin A-mediated damage in the rat. *The British journal of nutrition.* 2007;98:937–943.

Sutken Emine, Aral Erinc, Ozdemir Filiz, Uslu Sema, Alatas Ozkan, Colak Omer. Protective role of melatonin and coenzyme Q10 in ochratoxin A toxicity in rat liver and kidney. *International journal of toxicology.* 2007;26:81–87.

Hundhausen Christoph, Bösch-Saadatmandi Christine, Augustin Kay, Blank Ralf, Wolffram Siegfried, Rimbach Gerald. Effect of vitamin E and polyphenols on ochratoxin A-induced cytotoxicity in liver (HepG2) cells. *Journal of plant physiology.* 2005;162:818–822.

Bertelli Alberto A., Migliori Massimiliano, Filippi Cristina, et al. Effect of ethanol and red wine on ochratoxin a-induced experimental acute nephrotoxicity. *Journal of agricultural and food chemistry.* 2005;53:6924–6929.

Abdel-Wahhab Mosaad A., Abdel-Galil Mona M., El-Lithey Mohey. Melatonin counteracts oxidative stress in rats fed an ochratoxin A contaminated diet. *Journal of pineal research.* 2005;38:130–135.

Okutan Huseyin, Aydin Gulsen, Ozcelik Nurten. Protective role of melatonin in ochratoxin a toxicity in rat heart and lung. *Journal of applied toxicology : JAT.* 2004;24:505–512.

Baldi A., Losio M. N., Cheli F., et al. Evaluation of the protective effects of alpha-tocopherol and retinol against ochratoxin A cytotoxicity. *The British journal of nutrition.* 2004;91:507–512.

Stoev S. D., Stefanov M., Denev St, Radic B., Domijan A. M., Peraica M.. Experimental mycotoxicosis in chickens induced by ochratoxin A and penicillic acid and intervention with natural plant extracts. *Veterinary research communications.* 2004;28:727–746.

Ozçelik Nurten, Soyöz Mustafa, Kilinç İbrahim. Effects of ochratoxin a on oxidative damage in rat kidney: protective role of melatonin. *Journal of applied toxicology : JAT.* 2004;24:211–215.

Soyöz M., Ozçelik N., Kilinç I., Altuntas I.. The effects of ochratoxin A on lipid peroxidation and antioxidant enzymes: a protective role of melatonin. *Cell biology and toxicology.* 2004;20:213–219.

Borzecki A., Borzecka H., Sobieszek-Dziuba U., Wilgat E., Sieklucka-Dziuba M.. Vitamin E influence on selected parameters in rats after ochratoxin A intoxication. *Annales Universitatis Mariae Curie-Skłodowska. Sectio D: Medicina.* 2001;56:231–235.

Meki A. R., Hussein A. A.. Melatonin reduces oxidative stress induced by ochratoxin A in rat liver and kidney. *Comparative biochemistry and physiology. Toxicology & pharmacology : CBP.* 2001;130:305–313.

Baudrimont I., Sostaric B., Yenot C., et al. Aspartame prevents the karyomegaly induced by ochratoxin A in rat kidney. *Archives of toxicology.* 2001;75:176–183.

Atroshi F., Biese I., Saloniemi H., et al. Significance of apoptosis and its relationship to antioxidants after ochratoxin A administration in mice. *Journal of pharmacy & pharmaceutical sciences : a publication of the Canadian Society for Pharmaceutical Sciences, Société canadienne des sciences pharmaceutiques.* 2000;3:281–291.

Zanic-Grubisić T., Zrinski R., Cepelak I., Petrik J., Radić B., Pepelnjak S.. Studies of ochratoxin A-induced inhibition of phenylalanine hydroxylase and its reversal by phenylalanine. *Toxicology and applied pharmacology.* 2000;167:132–139.

Stoev S. D., Anguelov G., Ivanov I., Pavlov D.. Influence of ochratoxin A and an extract of artichoke on the vaccinal immunity and health in broiler chicks. *Experimental and toxicologic pathology.* 2000;52:43–55.

Abdel-Wahhab M. A., Nada S. A., Arbid M. S.. Ochratoxicosis: prevention of developmental toxicity by L-methionine in rats. *Journal of applied toxicology : JAT.* 1999;19:7–12.

Atroshi F., Rizzo A., Westermarck T., Ali-vehmas T.. Effects of tamoxifen, melatonin, coenzyme Q10, and L-carnitine supplementation on bacterial growth in the presence of

mycotoxins. *Pharmacological research : the official journal of the Italian Pharmacological Society.* 1998;38:289–295.

Creppy E. E., Baudrimont I., Anne-Marie . How aspartame prevents the toxicity of ochratoxin A. *The Journal of toxicological sciences.* 1998;23 Suppl 2:165–172.

Belmadani A., Tramu G., Betbeder A. M., Creppy E. E.. Subchronic effects of ochratoxin A on young adult rat brain and partial prevention by aspartame, a sweetener. *Human & experimental toxicology.* 1998;17:380–386.

Baudrimont I., Betbeder A. M., Creppy E. E.. Reduction of the ochratoxin A-induced cytotoxicity in Vero cells by aspartame. *Archives of toxicology.* 1997;71:290–298.

Bruinink A., Sidler C.. The neurotoxic effects of ochratoxin-A are reduced by protein binding but are not affected by L-phenylalanine. *Toxicology and applied pharmacology.* 1997;146:173–179.

Grosse Y., Chekir-Ghedira L., Huc A., et al. Retinol, ascorbic acid and alpha-tocopherol prevent DNA adduct formation in mice treated with the mycotoxins ochratoxin A and zearalenone. *Cancer letters.* 1997;114:225–229.

Baudrimont I., Ahouandjivo R., Creppy E. E.. Prevention of lipid peroxidation induced by ochratoxin A in Vero cells in culture by several agents. *Chemico-biological interactions.* 1997;104:29–40.

Dhuley J. N.. Effect of some Indian herbs on macrophage functions in ochratoxin A treated mice. *Journal of ethnopharmacology.* 1997;58:15–20.

Hoehler D., Marquardt R. R.. Influence of vitamins E and C on the toxic effects of ochratoxin A and T-2 toxin in chicks. *Poultry science.* 1996;75:1508–1515.

Creppy E. E., Baudrimont I., Belmadani A., Betbeder A. M.. Aspartame as a preventive agent of chronic toxic effects of ochratoxin A in experimental animals. *Food additives and contaminants.* 1996;13 Suppl:51–52.

Obrecht-Pflumio S., Grosse Y., Pfohl-Leszkowicz A., Dirheimer G.. Protection by indomethacin and aspirin against genotoxicity of ochratoxin A, particularly in the urinary bladder and kidney. *Archives of toxicology.* 1996;70:244–248.

Baudrimont I., Murn M., Betbeder A. M., Guilcher J., Creppy E. E.. Effect of piroxicam on the nephrotoxicity induced by ochratoxin A in rats. *Toxicology*. 1995;95:147–154.

Creppy E. E., Baudrimont I., Betbeder A. M.. Prevention of nephrotoxicity of ochratoxin A, a food contaminant. *Toxicology letters*. 1995;82-83:869–877.

Baudrimont I., Betbeder A. M., Gharbi A., Pfohl-Leszkowicz A., Dirheimer G., Creppy E. E.. Effect of superoxide dismutase and catalase on the nephrotoxicity induced by subchronical administration of ochratoxin A in rats. *Toxicology*. 1994;89:101–111.

Bose S., Sinha S. P.. Modulation of ochratoxin-produced genotoxicity in mice by vitamin C. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1994;32:533–537.

Huff W. E., Kubena L. F., Harvey R. B., Phillips T. D.. Efficacy of hydrated sodium calcium aluminosilicate to reduce the individual and combined toxicity of aflatoxin and ochratoxin A. *Poultry science*. 1992;71:64–69.

Gibson R. M., Bailey C. A., Kubena L. F., Huff W. E., Harvey R. B.. Impact of L-phenylalanine supplementation on the performance of three-week-old broilers fed diets containing ochratoxin A. 1. Effects on body weight, feed conversion, relative organ weight, and mortality. *Poultry science*. 1990;69:414–419.

Bailey C. A., Gibson R. M., Kubena L. F., Huff W. E., Harvey R. B.. Impact of L-phenylalanine supplementation on the performance of three-week-old broilers fed diets containing ochratoxin A. 2. Effects on hematology and clinical chemistry. *Poultry science*. 1990;69:420–425.

Kubena L. F., Harvey R. B., Phillips T. D., Fletcher O. J.. Influence of ochratoxin A and vanadium on various parameters in growing chicks. *Poultry science*. 1986;65:1671–1678.

Moroi K., Suzuki S., Kuga T., Yamazaki M., Kanisawa M.. Reduction of ochratoxin A toxicity in mice treated with phenylalanine and phenobarbital. *Toxicology letters*. 1985;25:1–5.

Creppy E. E., Röschenthaler R., Dirheimer G.. Inhibition of protein synthesis in mice by ochratoxin A and its prevention by phenylalanine. *Food and chemical toxicology : an*



international journal published for the British Industrial Biological Research Association. 1984;22:883–886.

Klinkert W., Lorkowski G., Creppy E. E., Dirheimer G., Röschenhaller R.. Inhibition of macrophage migration by ochratoxin A and citrinin, and prevention by phenylalanine of the ochratoxin A-induced inhibition. Toxicological European research. Recherche européenne en toxicologie. 1981;3:185–189.

Haubeck H. D., Lorkowski G., Kölsch E., Röschenhaller R.. Immunosuppression by ochratoxin A and its prevention by phenylalanine. Applied and environmental microbiology. 1981;41:1040–1042.

Creppy E. E., Schlegel M., Röschenhaller R., Dirheimer G.. Phenylalanine prevents acute poisoning by ochratoxina in mice. Toxicology letters. 1980;6:77–80.

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