

Influence of sex on biomarkers of oxidative stress in the kidney, lungs, and liver of rabbits after exposure to diazinon

Hernández-Moreno D.

Míguez M.P.

Soler F.

Pérez-López M.

The present study evaluated the effect of two oral doses of the pesticide diazinon (25 and 125 mg/kg bw) on four biochemical parameters (malondialdehyde and glutathione levels, and catalase and glutathione S-transferase enzymatic activities) in the kidney, lungs, and liver of rabbit after 10 days of exposure. Malondialdehyde levels were significantly greater in exposed animals compared to controls, especially in the animals exposed to the higher dose of the pesticide. This result was reflected in the glutathione levels, which were significantly lower at that same higher dose. Catalase activity was also inhibited by the higher dose of the pesticide in all three organs analysed, whereas inhibition of glutathione S-transferase activity was only significant for the kidney and lungs. There were some slight differences between the sexes: taking the results for all three organs, the higher dose of diazinon resulted in a clearly significant inhibitory effect on the catalase activity and glutathione levels in males, and a significant enhancing effect on the malondialdehyde levels in females. These results help to confirm the interest of considering such endogenous factors in future ecotoxicological studies, and that the four biomarkers considered are suitable for reflecting the toxic effects of diazinon on rabbits, especially the effects related to oxidative stress. [Figure not available: see fulltext.]. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Biomarker

Diazinon

Organophosphorus insecticide

Oxidative stress

Rabbit

Animalia

Oryctolagus cuniculus

antioxidant

biological marker

catalase

dimpylate

glutathione

glutathione peroxidase

glutathione transferase

insecticide

malonaldehyde

animal

drug effect

ecotoxicology

female

kidney

Leporidae

liver

lung

male

metabolism

oxidative stress

pollutant

sex factor

toxicity

Animals

Antioxidants

Biomarkers

Catalase

Diazinon

Ecotoxicology

Environmental Pollutants

Female

Glutathione

Glutathione Peroxidase

Glutathione Transferase

Insecticides

Kidney

Liver

Lung

Male

Malondialdehyde

Oxidative Stress

Rabbits

Sex Factors