

PP96. Toxicity of carvacrol and its potential in preventing L-arginine-induced pancreatic damage

Nikola M. Stojanović^{1*}, Milica Stevanović², Pavle Randjelović¹, Vladimir Petrović¹, Dušan Sokolović¹, Katarina Mitić², Bojan Mladenović¹, Jelena Lalić¹, Niko S. Radulović²

Keywords: carvacrol, pancreatic tissue, pancreatitis, pathohistological changes

Carvacrol (5-isopropyl-2-methylphenol) is a monoterpene present in the essential oils of many aromatic plants of the Lamiaceae family, including the genera *Origanum*, *Thymus*, *Thymbra*, and *Satureja*. Carvacrol is reported to have a variety of biological properties and its activity might partially be responsible for the activity of ethnomedicinal plants rich in this monoterpene. Our present work aims to estimate the damaging effect of carvacrol on Wistar rat pancreatic tissue, as well as to evaluate its protective action in preventing pancreas damage induced by L-arginine. The toxic and beneficial (in a low dose of 10 mg/kg) properties of carvacrol were assessed by measuring serum α -amylase and lipase activities and tissue malondialdehyde (MDA) content. Also, the pathohistological appearance of pancreatic tissue was assessed, where the presence of edema, inflammation, necrosis, and hemorrhage was scored. The application of higher doses of carvacrol (100 and 500 mg/kg) produced a significant increase in serum α -amylase activity, followed by inflammatory cell infiltration and patchy interlobular edema. In the L-arginine-induced pancreatitis model, a dose of 10 mg/kg of carvacrol was able to prevent the increase in serum α -amylase and lipase activities, as well as to prevent MDA formation compared to the animals that received L-arginine only. Pathological changes also followed the biochemical picture, where mild edema and inflammatory infiltration, with few necrotic areas, could be seen in the tissues of animals treated with carvacrol prior to L-arginine treatment. On the contrary, the tissues of the animals that received L-arginine only displayed massive leukocyte infiltration with edema and significant necrotic areas. One can speculate that the activity of carvacrol is probably arising from its ability to affect the function of multiple cellular mediators, as well as to prevent oxidative tissue damage by mitigating cell oxidative mechanisms.

Acknowledgments: This work was supported by the Ministry of Education, Science and Technological Development of Serbia [Project No. 172061 and 43012].

¹Faculty of Medicine, University of Niš, Serbia; ²Department of Chemistry, Faculty of Sciences and Mathematics, University of Niš, 18000 Niš, Serbia.

*Corresponding author: nikola.st90@yahoo.com