

PP26. Oregano (*Origanum vulgare*) essential oil prevents L-arginine-induced rat ileum villi damage

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Oregano (*Origanum vulgare* L., Lamiaceae) is used for centuries as a culinary spice due to its food flavor enhancing properties and its specific aroma. Essential oil isolated from oregano is known to affect the function of the gastrointestinal system by causing stomach and throat smooth muscle relaxation. The present work aims to evaluate the potential protective effects of oregano essential oil in rat ileum intestinal mucosa injury, induced with high doses of L-arginine, by tracking pathological changes in ileum mucosa. Male Wistar rats, divided into four groups (n=6), were treated with 50 mg/kg of oregano essential oil or 200 mg/kg of allopurinol (xanthinoxidase inhibitor) 1 h before a single dose of L-arginine (3.5 g/kg). Two groups served as the controls – one treated with a single dose of L-arginine, while the second group of animals remained untreated. One day after the treatment, all animals were sacrificed and the segments of distal ileum were dissected and fixed in 10% buffered formalin solution. Afterward, the tissue was processed routinely in order to obtain paraffin molds which were further cut into 4-5 μm thin sections and stained with hematoxylin and eosin. Microscopic analysis of the control group ileum revealed short and cylindrical villi, with great resemblance to fingers, with no pathological substrate present. Ileum villi from the group of animals treated only with L-arginine appeared swollen, with the villi tip significantly dilated. Also, in the lamina propria, a large number of leucocytes were visible. The application of both allopurinol and oregano essential oil was able to prevent such significant alterations in the intestinal villi appearance (both in its intensity and frequency) and to reduce the number of leucocytes that migrated to the lamina propria. The detected activity can possibly be attributed to numerous oil constituents found in this essential oil, but predominantly to its major constituents thymol and carvacrol.

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