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03. PARASITES OF DOMESTIC AND WILD ANIMALS

PA05-05 - HELMINTH CONTROL AND USE OF ALTERNATIVE APPROACHES TOPIC: 3.4 PREVENTION AND TREATMENT, DRUG RESISTANCE

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ANTHELMINTIC PROPERTIES OF ORIGANUM VULGARE (L.) ESSENTIAL OIL AGAINST GASTROINTESTINAL NEMATODES OF SHEEP - IN VITRO, IN VIVO AND TOXICITY STUDY

Filip Štrbac¹, Antonio Bosco², Dragica Stojanović¹, Nataša Simin³, Dejan Orčić³, Radomir Ratajac⁴, Kosta Petrović¹, Giuseppe Cringoli², Laura Rinaldi²

¹University of Novi Sad, Faculty of Agriculture, Department Of Veterinary Medicine, Novi Sad, Serbia, ²University of Naples Federico II, CREMOPAR, Department Of Veterinary Medicine And Animal Production, Naples, Italy, ³University of Novi Sad, Faculty of Sciences, Department Of Chemistry, Biochemistry And Environmental Protection, Novi Sad, Serbia, ⁴Scientific Veterinary Institute Novi Sad, Department Of Drug Testing And Toxicology, Novi Sad, Serbia

Introduction: The management of nematode infections in animals represents a challenge due to the development of anthelmintic resistance to commercial drugs. This study aimed to examine the anthelmintic efficacy of the *Origanum vulgare* (L.) essential oil (EO) against gastrointestinal nematodes (GINs) of sheep, as well as to evaluate the possibility of its application in veterinary practice.

Methods: Firstly, the in vitro Egg Hatch Test (EHT) was conducted at eight different concentrations (50, 12.5, 3.125, 0.781, 0.195, 0.049, 0.025 and 0.0125 mg/mL) of the tested EO. Next, the in vivo Faecal Egg Count Reduction Test (FECRT) was performed using sheep from two farms in southern Italy, whereby the *O. vulgare* EO was administered orally at a mean single dose of 150 mg/kg. The toxic effects of the applied EO on animals, as well as EO chemical composition, were also evaluated.

Results: In the EHT, ovicidal activity, i.e. the inhibition of egg hatchability varied from 71.3-93.7% depending on the concentration used. The high anthelmintic potential was confirmed in the FECRT with a total reduction of nematode eggs in faeces of 43.2% and 60.1% at days 7 and 14 after treatment, respectively. In addition, no toxic effects were noticed during clinical examination of sheep or observing blood count and liver function tests results. The main compounds of the tested EO identified by GC-MS analyses were carvacrol (76.2%), p-cymene (12.6%) and γ -terpinene (2.6%).

Conclusions: The obtained results suggest the strong activity of the *O. vulgare* EO against sheep GINs due to a high percentage of carvacrol, whereby it can be considered safe for sheep at the dose tested in vivo. Therefore, EO of oregano may be applied in veterinary practice in order to reduce the use of commercial drugs and combat anthelmintic resistance.

Keywords: anthelmintic resistance, *Origanum* essential oil, in vitro EHT, In vivo FECRT, Gastrointestinal nematodes





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CERTIFICATE OF ORAL PRESENTATION

This is to certify that:

Filip Štrbac

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co-authored by:

Filip Štrbac (Serbia), Antonio Bosco (Italy), Dragica Stojanović (Serbia), Nataša Simin (Serbia), Dejan Orčić (Serbia),
Radomir Ratajac (Serbia), Kosta Petrović (Serbia), Giuseppe Cringoli (Italy), Laura Rinaldi (Italy)

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A handwritten signature in black ink, appearing to be 'P. Jokelainen'.

Pikka Jokelainen
Chair of ICOPA 2022
President of SBSP

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Lars Hviid
Chair of ICOPA 2022
Scientific Committee
President of DSP