FACTA UNIVERSITATIS
Series: **Physics, Chemistry and Technology** Vol. 16, N° 1, Special Issue, 2018, p. 29
49th International Symposium on Essential Oils (ISEO2018) • Book of Abstracts

49th ISEO

IS3. Therapeutic efficiency of essential oils against *Helicobacter pylori* infections

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Keywords: *Helicobacter pylori*, essential oils, linalool, thymol

Helicobacter pylori, a Gram-negative bacterium found in the stomach, is the cause of more than 90% of duodenal and 80% of gastric ulcers, and the major risk factor for gastric carcinoma and primary gastric lymphoma. Antibiotic therapy for treating *H. pylori* infections, the only available in current medical practice, has multiple disadvantages: lack of efficacy, development of resistance, adverse effects, and possible recurrence of the disease. Furthermore, the treatment is often associated with gastrointestinal side effects [1]. Consequently, there is a growing interest in the development of new antimicrobial therapeutic agents, more efficient against *H. pylori*, preferably of natural origin. Good candidates for that purpose are the volatile compounds present in essential oils. Due to the complexity of their composition, bacteria rarely develop resistance toward them [2]. Here, we reported the results of the efficacy of various essential oils, and their mixtures, against *H. pylori*. The highest *in vitro* activity was shown by *Satureja hortensis*, *Origanum vulgare* subsp. *vulgare* and *O. vulgare* subsp. *hirtum* essential oils. Furthermore, their binary and ternary mixtures exhibited notably higher antimicrobial activities [3]. The activity of the binary mixture of *S. hortensis* and *O. vulgare* subsp. *hirtum* essential oils (2MIX) was confirmed by an *in vivo* study in a mouse model, where changes in *H. pylori* colonization were detected by PCR and histological analyses of gastric samples. Furthermore, 2MIX show neither *in vitro* nor *in vivo* toxicity and do not have any immunomodulatory or allergic effect [4].

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Acknowledgments: This study was co-financed by the EU, HUSRB/1203/214/230.

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