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Fund “Nauka” Project № 25004 Resume – Competition-based Session 2025:

“Pharmacological study of *Levisticum officinale* extract in models of oxidative stress and inflammation in experimental animals”

Project leader: Assoc. prof. Antoaneta Borisova Georgieva, MD, PhD

The aim of the project is to study the gastro-entero-hepatoprotective, antioxidant and anti-inflammatory activity of a standardized hydroalcoholic extract produced from lovage (*Levisticum officinale*) aerial parts in acute experimental models of indomethacin-induced gastric ulcer, trinitrobenzene sulfonate-induced colitis, paracetamol-induced hepatotoxicity and carrageenan-induced paw inflammation in laboratory Wistar rats. The aim of the project is fully based on the results of a survey performed by the project leader who is also a member of the study group „Gastro-entero-hepatoprotection and therapy“ at the Research Institute of Medical University – Varna (RIMU). The aforementioned survey summarizes the existing scientific data regarding the phytochemical composition of the traditional Bulgarian herb lovage (*L. officinale*), and of the biological activity of the herb and of the polyphenols (flavonoids and phenolic acids) which comprise a significant part of its composition. In order to achieve the project aim, four *in vivo* experiments should be performed to assess the antioxidant, anti-inflammatory and organ protective effects of a hydroalcoholic extract of *L. officinale* aerial parts applied by oral gavage. Classical and modern pharmacological, biochemical, histopathological, immunohistochemical and statistical methods will be used to achieve the goal.

After performing all project activities, the following results are expected:

1. Assessed antioxidant, anti-inflammatory and organ protective activity of a standardized hydroalcoholic extract of lovage (Levisticum officinale) aerial parts in a model of indomethacin-induced gastric ulcer by biochemical and enzyme-linked immunoadsorption analyzes of blood serum and organ homogenates, histopathological and immunohistochemical investigation;
2. Assessed antioxidant, anti-inflammatory and organ protective activity of a standardized hydroalcoholic extract of lovage (Levisticum officinale) aerial parts in a model of trinitrobenzene sulfonate-induced colitis by biochemical and enzyme-linked immunoadsorption analyzes of blood serum and organ homogenates, histopathological and immunohistochemical investigation;
3. Assessed antioxidant, anti-inflammatory and organ protective activity of a standardized hydroalcoholic extract of lovage (Levisticum officinale) aerial

parts in a model of paracetamol-induced hepatotoxicity by biochemical and enzyme-linked immunoadsorption analyzes of blood serum and organ homogenates, histopathological and immunohistochemical investigation;

4. Assessed anti-inflammatory activity of a standardized hydroalcoholic extract of lovage (Levisticum officinale) aerial parts in a model of carrageenan-induced paw-inflammation by a pharmacological test using a digital water plethysmometer;
5. Performed at least 16 presentations at scientific forums in Bulgaria, incl. at least 8 presentations of students, PhD student and post-doctoral researchers;
6. Published or accepted for publication at least one open-access scientific article in a Web of Science (Q1/Q2)-indexed journal and one article in a scientific journal of MU-Varna;
7. Prepared and released one video about the project in the University TV channel MuViTv.