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Fund “Nauka” Project № 24016 Resume – Autumn Competition-based Session 2024:

“Study of the antitumor action of the bioflavonoid fustin in pharmacological models on experimental animals”

Project leader: Chief assist. prof. Danail Vasilev Pavlov, PhD

The project proposal aims to study the antitumor action of the bioflavonoid fustin in models of methylnitrosourea-induced breast cancer and azoxymethane-induced colon carcinogenesis in experimental rats. The aim is based on the results of a project funded by the Bulgarian National Science Fund of the Ministry of Education and Science, in which fustin isolated and purified from the hearthwood of Eurasian smoke-tree (*Cotinus coggygria*) showed *in vitro* antitumor activity on human cancer cell lines and exhibited *in vivo* anti-inflammatory and organoprotective effects in acute models of inflammation and oxidative stress in experimental animals. The planned study is a logical continuation of the experimental studies of the scientific group “Gastro-entero-hepatoprotection and therapy” in the field “Nutrition and Quality of Life” of the Research Institute of Medical University of Varna in collaboration with researchers from the University of Belgrade.

Two main groups of tasks were set:

1. Laboratory synthesis and purification of fustin by column chromatography, thin layer chromatography, high performance liquid chromatography and NMR spectroscopy;
2. *In vivo* experimental study in rats to evaluate the antitumor, anti-inflammatory and organoprotective effects of fustin in a model of methylnitrosourea-induced breast cancer and azoxymethane-induced colon carcinogenesis by histopathological evaluation and immunohistochemical assays.

The following **results** are expected from the implementation of the activities envisaged by the project proposal:

1. Synthesized 50 g of fustin with a purity of more than 98%;
2. Evaluated antitumor, anti-inflammatory and organoprotective effects of fustin in a methylnitrosourea-induced breast cancer model by histopathological evaluation and immunohistochemical tests;
3. Evaluated antitumor, anti-inflammatory and organoprotective effects of fustin in an azoxymethane-induced colon carcinogenesis model by histopathological evaluation and immunohistochemical assays;
4. At least 8 participations of young scientists, undergraduate, graduate and postdoctoral students in scientific forums in Bulgaria;

5. Published or accepted for publication at least two open access articles in journals with impact factor or impact rank (refereed in Web of Science and/or Scopus) and two articles in the periodicals of MU-Varna (Scripta Scientifica Medica or Scripta Scientifica Pharmaceutica);
6. 1 online video material for project prepared and published at the university MuViTv.