

Statement from

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**(External Member of the Scientific jury based on an order No. R-109-
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REGARDING: Procedure for the defense of thesis for awarding the educational and scientific degree "doctor", Area of higher education 7. Healthcare and sports, PD 7.3. Pharmacy, in the doctoral program "Pharmacology (incl. Pharmacokinetics and chemotherapy"

Thesis title:

"Nanostructured Lipid Carriers Loaded with Hypericum perforatum L. Extract for Dermal Application and Accelerated Wound Healing"

Author of thesis:

Mag. Pharm. Yoana Nikolova Sotirova- PhD student in regular form of education in
Medical University- Varna

Scientific supervisors:

Prof. Kaloyan Georgiev, PhD, DSc, Assoc. Prof. Velichka Andonova, PhD

Importance of the topic:

Wound treatment is a very serious and widespread problem, and currently used therapeutic agents and approaches do not always manage to balance the necessary microenvironment in the damaged skin tissue. For this purpose, it is necessary to introduce

new medicinal substances that have improved activity and a broad spectrum of action. St. John's wort (*Hypericum perforatum* L.) is indicated in cases of mental disorders, as well as in the therapy of skin pathological conditions involving wounds of various origins. For the manifestation of its pharmacological effect, the main role is played by the biologically active substance hyperforin, which is a compound with extremely low chemical stability. The latter turns out to be a significant challenge to its introduction into dermatological practice.

Relevance of the developed topic:

The thesis topic of Mag. Pharm. Yoana Nikolova Sotirova is modern. The evaluated thesis covers, first of all, the creation of a modified method of maceration of the plant substance of St. John's wort with limited influence of light and atmospheric oxygen.

The use of nanostructured lipid carriers (NLCs), which have a high capacity for drug loading, is a modern approach to increase the stability of hyperforin. For this purpose, unloaded NLCs have been developed and characterized by high-speed homogenization followed by ultrasonification under variation of solid lipids, liquid oils, as well as experimental conditions. In addition, an important approach in the development of nanostructured lipid carriers for dermal application is their inclusion in a semi-solid dosage form, which will increase the contact time with the skin, and hence the therapeutic effectiveness. For this purpose, a biphasic gel with included NLCs have been developed and characterized, which has a favorable texture and moisturizing properties, and also helps to optimize dermal drug delivery.

The thesis also set a goal and objectives to carry out an *in vivo* study of the wound healing potential of the prepared final semi-solid dosage form on a model of an excisional wound in experimental animals. The dynamics of tissue repair was also monitored by the changes in the size of the caused wounds over time. The plasma antioxidant status (antioxidant capacity and degree of oxidative stress) was also determined.

The research, purpose and objectives of the thesis fall within the scope of the scientific specialty of the doctoral program and correspond to the indicators for scientometrics of thesis for the acquisition of Educational and Scientific degree of

“Doctor”. The methodological part meaningfully and comprehensively describes the methods and materials of the research, which shows knowledge of the matter, in-depth approach and acquired skills of the PhD student during the implementation of the doctoral program.

In connection with the thesis, 2 publications were presented, the most significant one being published in a journal with a high impact factor. The quantitative requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), and the Regulations of the Medical University "Prof. Dr. P. Stoyanov" – Varna have been implemented, and the conclusions, recommendations, as well as the contributions of scientific-theoretical and scientific-applied nature have been excellently presented.

The submitted abstract meets the requirements.

Conclusion:

The presented thesis for the acquisition of the Educational and Scientific degree of “Doctor” of Mag. Pharm. Yoana Nikolova Sotirova, full-time PhD student at the Medical University "Prof. Dr. P. Stoyanov" – Varna, meets the requirements, and is focused on a specific interdisciplinary field and will be of interest to the pharmaceutical industry.

After I got acquainted in detail with the presented set of materials and documents on the procedure for defending the thesis of Mag. Pharm. Yoana Nikolova Sotirova, I believe that the topic, volume, results obtained, conclusions drawn and the formulated contributions fully meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), RILDASRB, Regulation of the Medical University "Prof. Dr. P. Stoyanov" – Varna for a doctoral program, and are also a result of the author's own research and development under the expert guidance of the tandem of scientific supervisors.

Taking into account the above arguments and the presented thesis, I give a **POSITIVE ASSESSMENT** and recommend to the respected members of the Scientific

Jury to vote for awarding the Educational and Scientific degree of “**Doctor**” to Mag. Pharm.
Yoana Nikolova Sotirova.

Заличено на основание чл. 5,
§1, б. „В“ от Регламент (ЕС)
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Sofia

27th Jan 2025


/Prof. Krum Stefanov Kafedjiiski, PhD/

