

OPINION

By prof. Hristo Stefanov Gagov, PhD, Faculty of Biology
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Regarding the PhD thesis of Venelin Ventsislavov Tsvetkov,
entitled: " Study of the impact of physical and biological factors on the realization of herpes
viruses ", professional field 4.3. "Biological Sciences",
scientific specialty "Virusology"

PhD thesis of Venelin Ventsislavov Tsvetkov was developed under the scientific supervision of Prof. Dr. Stoyan Shishkov in the Laboratory of Virusology of the Faculty of Biology of the Sofia University "St. Kliment Ohridski". It is based on three scientific publications, in two of which Venelin Tsvetkov is the first author. One of the two articles has an impact factor (IF) and is in Reports of the BAS (IF=0.251 for 2017, Q2) and the other is published in the journal with an impact rank (SJR) Plasma Medicine (SJR =0.264, Q3). The third publication is in the SU Yearbook 2022 and presents the methodology for determining the virus filtering ability of commercially available protective face masks.

The dissertation consists of 123 pages. It is structured according to the requirements and contains the necessary sections.

The literature review is tightly written, sufficiently detailed and thorough. It has a volume of 42 pages and includes data on the classification, structure and replication cycle of herpes viruses, as well as their cytopathology and pathogenesis. Finally, the response of the immune system against them, some therapeutic approaches and prevention are discussed.

Aim and tasks. The aim of the dissertation work is clearly defined as containing the three emphases of this work. Three briefly formulated tasks follow from it, and two of them (1 and 3) have 2 and 4 subtasks, respectively. They are focused on the antiviral effect of the investigated plant extracts and on the intrinsic and antiviral effects of low-temperature non-

equilibrium gas discharge plasma on culture medium, MDBK (Madin-Darby Bovine Kidney) cells and virions.

The Results and discussion section occupies a total of 31 pages. The results are summarized and presented in 19 figures and 16 tables. The discussion of the obtained data is concise and parallel to them. It is to a large extent supplemented by a two-page conclusion, but in it, as well as in Results and discussion, there are no references to the scientific literature, which significantly impairs the quality of the discussion of the obtained data.

The References of literature appears to be comprehensive given by the 155 cited sources. Of these, 4 are in Bulgarian, and the remaining 151 are in English. This would generally indicate a good knowledge of the scientific literature on the subject of the dissertation, if there were not one but. And that is that some of the quoted titles are absent in the text. Given the excellent and detailed results, this circumstance seems strange. In addition, the citation under figures 5 and 7 - Wagner et al., 2008 - has the number - /145/, and the one under fig. 8 – Johnson et al., 2008 – absent from the literature. Some citations are supplemented by references to sources on the Internet without indicating the titles and authors of the documents - e.g. on pages 15 and 26, references [154] and [155].

The nineteen **Conclusions** summarize the obtained data in detail.

The three **Contributions** are concrete and substantiated. I highly appreciate the applied character of these studies, which is traditional for the scientific unit of the Laboratory of Virusology.

The first contribution reported a significant protective effect of a total extract of *Vaccinium vitis-idaea* L. and to a lesser extent from other plant sources on HSV 2 (DD) inoculated cells.

Another contribution is related to the research conducted for the first time on a global scale of the antiviral effect of food and water treated with surface wave non-equilibrium gas-discharge plasma using a methodology developed by Bulgarian scientists.

Venelin Tsvetkov, as part of the team of the Laboratory of Virusology, has applied an effective method for determining the effectiveness of face masks with filtering efficiency. As a result for a third contribution is pointed out that FFP (Filtering Face Piece) face masks provide the greatest degree of protection of the face masks studied, and the credibility of this result has been confirmed by a certified European laboratory.

The discussion of the presented very interesting data is too laconic and does not offer a systematic review and comparison with current scientific opinions in the field of conclusions and contributions.

The Abstract of the thesis is in Bulgarian and English, and is very detailed. It consists of 62 pages, which reflect the main highlights and results of the doctoral work, presents the obtained results very well, as well as the 3 contributions and a list of the three publications that are related to the dissertation work of Venelin Tsvetkov. 16 conclusions are included, which is three less than the dissertation. Conclusions 7, 8 and 9 are omitted in the abstract.

I noted three citations to two of the publications related to this thesis (08/01/2022, Google Scholar).

Personal impressions. I do not know Venelin Ventsislavov Tsvetkov personally. I judge him by the materials provided to me, consisting of a doctoral thesis, an abstract and scientific publications.

In conclusion, I consider that the set goal and tasks have been successfully fulfilled. In terms of structure and content, the presented dissertation work and related publications satisfy the minimum national requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its application for ONS "Doctor" and

the Regulations of Sofia University St. Kliment Ohridski. Based on the above, I give my positive assessment of the conducted research, presented in a dissertation, abstract, publications, conclusions and contributions. I propose to the respected scientific jury to award Venelin Ventsislavov Tsvetkov the PhD degree in professional field 4.3. Biological sciences, scientific specialty Virusology.

Signature:

Sofia, 20/09/2022

(Prof. Dr. Hristo Gagov)