

Review of the dissertation thesis
**Alkaloids of *Dicranostigma franchetianum* (Prain) Fedde and
their selected biological activity**

Author: Viriyanata Wijaya, M.Sc.

Reviewer: Pavel Klouček

Search for biologically active compounds from plants is one of the oldest disciplines in the history of biological sciences. Thanks to that, numerous medicines based on such research saved countless lives. Among them, isoquinoline alkaloids already proved their effectivity, either in the traditional or current medicinal systems. Molecules like morphine, berberine or sanguinarine are one of the best examples. However, emerging or recurrent threads for the humankind, such as drug resistant microorganisms or Alzheimer disease, motivate us to search deeper. The present thesis aimed at phytochemical screening and isolation of such compounds from *Dicranostigma franchetianum*, interesting and traditional medicinal plant from western China.

The present work is in classical format. Introduction and Theoretical part describe very well the topics connected to the plant itself and its chemical constituents. In this way, the coverage of the references is amazing. What I miss is some description of the diseases and biological activity tests that were used in the experimental part. I think that brief description of aetiology of the diseases, pharmacological targets and corresponding mechanisms of the screening test used would be beneficial for the reader to understand and interpret the results. The same applies to the theory of alkaloid isolation. Also the chapter 3.5.3.5 about antibacterial activity of IAs could be more detailed, because e.g. sanguinarine or berberine are famous antibacterial agents with even commercial applications. On the other hand, the chapter describing current knowledge about the biological activities connected to Alzheimer's disease is of *D. franchetianum* is one of the best parts of the thesis.

In the Experimental part the major chapter is dedicated to the extraction and isolation of the compounds. It is obvious, that it was massive amount of work, with successful results. Since the procedures are so complicated, a scheme of the fractionation would be helpful. The description of the biological activity tests is also well described. I was just missing the final concentrations of the inocula for antimycobacterial screening and description of the selectivity index and CLogP calculation.

Both chapters results and Discussion are very well written, and I have no major objections. Notably, the activity of the isolation artifact BF-06 is very interesting finding.

Generally, the thesis is written in a clear and logical manner, with few parts that could be improved. However, these are only minor shortcomings, I have not come across any major ones.

In terms of language and typography there is almost nothing to improve. Overall, the work is of a high quality, with a substantial degree of novelty and invention. Even though there was no new compound isolated, there is huge amount of work and the student had to master several complicated techniques.

In my opinion, the thesis meets the necessary requirements and I recommend its acceptance for the defence.

Questions:

Is there any need for application of Nagoya protocol rules for this study?

What is the current status of IAs as antibacterial agents? Are there any clinical or commercial products on the market?

What was the final concentration of the inoculum in the microplate wells (in log CFU/ml) for antimycobacterial screening?

Comments:

P 13/par 2 – the reference no. 4 is not really the best for such general statements.

P 13/par 3 – leucemia -> leukemia

P 21/3.5.1.2 – “small plant with flat rosettes” twice in the same paragraph

P 27/3.5.3/ par 2 – this paragraph is redundant, describing previously mentioned facts

P 31/par 1 – *Sanguinaria canadensis* in italics.

I couldn't find figure 5.