



Assessment of the PhD dissertation

Surname, Name: Patil, Rutuja Hiraji
PhD theme: Metabolomics of clinically important *Aspergillus fumigatus* and *Rhizopus microsporus* in the diagnosis of invasive fungal infections
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The dissertation focuses on the use of metallomics in the diagnosis of selected pulmonary infections caused by pathogenic fungi. The theoretical part describes selected fungi as pathogens, their effect and current treatment. Furthermore, the metabolism of siderophores and mycotoxins is discussed on the basis of in-vitro studies. In the experimental part, the author used advanced techniques of mass spectrometry and to characterise and subsequently quantify the above mentioned siderophores and mycotoxins. The work has high potential in routine diagnostics and yields high clinical efficacy. The presented work has a very good stylistic level. The author achieved a citation index of 3 with a very "nice" 23 citations (source: Web of Science). In conclusion, I would like to highlight the excellent scientific level of this work at the level of both analytical chemistry and its application.

I confirm that the student has demonstrated creative ability in the relevant area of research in the dissertation. Based on the above, I recommend that the thesis be accepted for defence and, on the basis of a successful defence, be awarded the academic degree of PhD according to section §47 of the Higher Education Act No. 111/98 Coll.



Comments:

- 1) Figure 5.6 - It would have been better to put numbers in the table than just a colourful simplification of performance
- 2) poor quality of Figure 2.1; Figures 2.4 and 2.5 should be larger.

Question for discussion:

- 1) What is your experience with a LC column with a diameter of 1 mm and a flow rate of 50 ul/min? Why did you use this experimental setting, while 2mm diameter columns are commonly used?
- 2) I would be very careful of using non-parametric Kruskal-Wallis (or Mann Whitney U test) for your purposes where you are working with triplicates. Similarly, using means +/- SD for triplicates or duplicates is inappropriate (e.g. Fig. 5.13 and 5.15). But I understand that it is widely used and accepted in the scientific community. Any idea how to improve the statistical issue?
- 3) How do you see the application of your methods to routine diagnostics, whether for veterinary or human purposes?

In Olomouc, 1 August 2023

David Friedecký