

Supervisor's review of Ph.D. Thesis of Ing. David Šebela

Title: The development of methodological and technological platform for noninvasive estimation of phenolic compounds in leaves and berries

Here I my report to the Ph.DsStudy and provide my comments and assessment of David Šebela's work during his Ph.D study.

The goal of this Ph.D Thesis is a non-invasive estimation of phenolic compounds in plant leaves and berries using optical methods. The work was done mainly with grapevine (*Vitis vinifera* L. subsp. *vinifera*) and rice (*Oryza sativa* L). Techniques used in this study, concretely fluorescence and reflectance measurements, are already well known techniques used in remote sensing. However, the application of these methods for phenolic compounds content estimation is, according to my opinion, novel and as such it means that this is an original work contributing to recent science.

This thesis is divided into four parts. Theoretical background, Material and methods, Results presented in five already published papers and in three manuscripts and Conclusions.

Here are few comments to this Ph.D. study:

Theoretical background

Although section of phenolic compounds classification and presence in plants is very well written and described, section of their detection is sparse. Since remote non-invasive detection of phenolic compounds is the focus of this study, more methods and more literature should be reviewed. Moreover, some more discussion about weaknesses of non- invasive technology and/or novel inventions of David Šebela in using existing technology for phenolic compound detection should be presented.

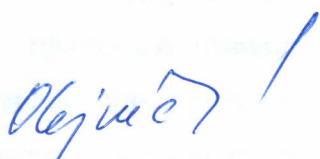
The Conclusions seems to be week. Although novel approaches in non-invasive phenolic compound detection has been presented, a strong statement and suggestion for future work is missing.

However, I think that set of presented results shows a good job of David. His contribution to all our experiments was substantial. He was always reliable, hardworking as well as independent in his experiments, evaluations and presentations. His fellowship in Philippines and his current stay in

Allow him application of his knowledge and skills in practice, which is, according to my opinion, the goal of the university education.

Despite of the mentioned criticism and minor grammar mistakes I recommend presented dissertation thesis for defence and I recommend to award Ing. David Šebela the title Ph.D. in Biophysics.

In České Budějovice 13. 09. 2016



Mgr. Julie Olejníčková, Ph.D.