

Review of bachelor thesis by Sophie Fuchtner „Study of the early phase of viral infection in Chinese cabbage“

The thesis uses real-time PCR to monitor progression of viral infection within a few days post inoculation. Scope of the thesis is beneficial and actual; the method used is modern, suitable and correctly applied. The results of the work can be useful for the other authors, however I have some objections to interpretation of results obtained. Generally, most of changes recorded (days 2 – 7 for CaMV, and days 0 – 4 for TuMV) can be explained as local variation instead of results of some plant defense mechanism as suggested by the author.

At first, on the pg. 22 there are badly interpreted data from 2nd day post inoculation of CaMV. According to curve on Fig. 6 it could seem, that concentration of the virus is increasing. However, looking more carefully on the points and to Table 3 on the raw data as well, it shows that concentration of virus decreased comparing to previous day. The increasing shape of curve between days 1 and 2 is probably the relict of mathematical approximation when creating the graph. Therefore, all speculations about behavior of virus at this stage of infection are false.

Second, another increase and subsequent decrease of virus concentration is recorded in 4th and 5th day. The author suggests that these minute changes in assessed concentration are manifestation of real virus-host interaction. According to my opinion all the changes of viral concentration between days 2 and 7 (including both) represent only background variation and are not statistically significant. All the changes are within the same order and can be simply caused by variation of concentration of virus in leaf taken for analysis. Therefore, I would like to ask the author to prove that any of the mentioned values differ statistically significantly from the rest of them. Similar situation might be in the case of TuMV for the days 0 – 4 post inoculation.

However, regardless of doubtful interpretation of some parts of the work and more formal drawbacks (see below), the aims of the bachelor thesis were fulfilled. On the basis of results of the bachelor defense together and after satisfactory answering the questions listed below, I suggest classification **“velmi dobře” (B)**.

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Formal remarks:

- + Abstract and Methods – using of passive form would be more appropriate
- + Abstract should be shortened to highlight results obtained. For example, sentence „The software records the signal, and displays the cycle at which the fluorescence signal of the corresponding sample crosses a predefined threshold value.“ can be deleted or moved to the Methods instead, etc.
- + Abbreviations SAR (systemic acquired resistance), HR (hypersensitive reaction), MW (molecular weight), PD (plasmodesmata), and CP (capsid protein) are used but not defined in chapter „Shortcut definitions“.
- + Citations in the text are listed non-uniformly: some of them lacking comma after „et al.“ (e.g. „Leclerc et al. 1999“ on pg 8), some of them lacking dot „after „al“ (e.g. „Astier et al, 2007“ on pg. 8, „Tremblay et al, 1990“ on pg. 10)

+ Paper of Citovsky et al. (1991) is sometimes cited as „Citovsky, Knor and Zambryski (1991), other time only „Citovsky et al. (1991) is used (see pg. 9).

+ References (pg. 26 – 29) are much skimmed work: Not even the size of font is smaller for some references and dots or semi-colons are missing somewhere, but all references are written non-uniformly. In some references, last author is separated by „and“ from the others, in the rest of cases comma is used instead, when more than 2 authors are on the publication. In some references the month and year are used after the name of journal, in the others the order is opposite or these are missing completely. In some references words „volume“, „issue“, and „pages“ are preceding the appropriate numbers, in the rest of references only the numbers are used. Somewhere, DOI is listed although paper has been published long time ago and volume, issue and pages has been assigned and are written in reference, somewhere http-link is given for printed paper. References „Harries et al.“, Hohn T. et al.“, and „Leclerc et al.“ are written by using „et al.“ without listing all authors of publication, furthermore first author of the latter is „Véronique Leh“ not „Leclerc“ who is fourth author of the paper. Name of Shepherd R.J. is mistyped.

Questions:

- + In the abstract it is claimed, that „the replicational behavior of both pathogens was obtained without influence of stress on the plant-virus interaction“. This is however a little bit speculative and was not proven in the thesis. According to the method used, pieces of the same leaf were taken gradually within several days of planting, subjecting at least some parts of leaf to stress conditions.
- + What does it mean that movement protein binds to 35S subunit in „cooperative way “(pg. 9
- + The first sentence of chapter 3.2.4 Cell-to-cell movement (pg. 12) deals about one single movement protein (MP) however Potyviruses do not have such a one. Instead of it, several different proteins participate in virus movement functions. In text, only VPg is mentioned. Which other proteins facilitate cell-to-cell movement in Potyviruses?
- + prove that any value of CaMV concentration between days 2 – 7 (including both) differs statistically significantly from the rest of them