Dear Prof. Sven D Jelaska,

Please find enclosed our revised manuscript. Below you will find the list of changes and comments on reviewers feedback. All suggestions and criticism have been addressed either in the manuscript or in this cover letter. I have tried to make this letter as short as possible (which was difficult due to the amount of changes) so let me know if more details are needed.

Another person proof read the manuscript to improve the clarity and eliminate language issues (reviewer A and B)

We changed the introduction, namely added information about the symptoms of S deficit, deleted the sentence irrelevant to the Introduction section (reviewer B)

We briefly described the procedure used for preparing root ethanol extracts (reviewer B)

Regarding the microscopy techniques, we used confocal and light microscopy. Unfortunately we did not have light microscope with attached camera. However the color on photos is never the same as under the microscope because the picture is captured by sensor, then the brightness is adjusted to the best level for multiple monitors as most of the readers do not have calibrated professional monitor (I do not have one). Different monitors influence the color reproduction and during printing there is another factor that change the color. Therefore much more accurate is looking at the absorbance on Figure 2 then on the photo itself to “measure” the color. What we can do on the Figure 1 is to compare the photos of plants from different conditions (optimal and sulfur deficit).

We shortened the results section and present the data in a more concise manner (reviewer B)

We changed eye-visible to macroscopic, alcohol to ethanol, hairy roots to root hairs (reviewer B)

We added scale bars on the images (reviewer B)

We specified the color of the deposits (reviewer B)

In the discussion section we have re-written part because absorption in UV range itself cannot be the reason of the yellow color. We also added all information requested by reviewer B

Regarding the reviewer B, we would like to thank him/her very much for the review and comments regarding possible future experiments that could really improve our understanding of the phenomenon described in the manuscript. However, the purpose of the submitted manuscript is to report the phenomenon not yet described within the literature and its preliminary characterization. The performed research clearly point to UV-absorbing compounds to be the reason of root yellowing under the sulfur deficiency condition (as stated in the abstract and in the discussion section). On the other hand, in the discussion, the most probably (but still a bit speculative) direction for future studies of this phenomenon has been proposed. Indeed, the subsequent research on biochemical nature of the deposits as well as their subcellular localization could extremely improve the manuscript and definitely should be studied in the future, however it was far beyond the scope of the submitted manuscript. Please notice that the manuscript has been submitted as short communication to the general biology journal so lack of the more sophisticated studies of the described physiological phenomenon is understandable on this stage of the subject development.

Ethanol extracts have been chosen as easiest and most convenient for analysis of color compounds in plants (reviewer A)

It was 2nd Sulphyton Conference in Norwich (we added this information in the revised manuscript). After my presentation at least 3 group leaders confirmed the phenomenon however they could not point to a reason and were sceptic regarding repeatability using Arabidopsis. Personally, we think that ensuring high stringency of S deficit might be crucial for the clear occurrence of phenomenon, but more research is needed (reviewer A)

The link between suggested autophagy article and our findings is not clear and extremely speculative (much more than other parts of discussion and we know that as one of us is the co-author of this paper). (reviewer A)

Because of the limited space we provided only information crucial for understanding of our results in the wider context. Therefore we described only the part of the phenylpropanoid pathway and only these characteristics of UPB1 that are relevant to the subject. The references for these UPB1 characteristics are included, in the revised version they are references 36 and 37 (you have to search supplementary material for the mentioned photo) (reviewer A)

I hope that the revised manuscript fulfill the criteria of publication as a short communication in Periodicum biologorum.

Sincerely yours,

Dr. Grzegorz Moniuszko

Institute of Biochemistry and Biophysics, Polish Academy of Sciences

ul. Pawinskiego 5A, 02-106 Warsaw, Poland

tel.: +48226595749, fax: +48226584804, e-mail: Mongr@ibb.waw.pl