Dear Editor,

Thank You very much on second reviewer response for our manuscript entitled “*Investigation into the Potential Chemical Mechanism of Carotenoids Pro-oxidant Activity with Liposomes under UV- Irradiation*“.

With thanks to reviewer for the given effort, please find below the responses to the reviewers:

1. According to the above mentioned comments, please change in Title of the work “inside liposomes” with “with liposomes”. The same change should be done in sentence in abstract “Their pro-oxidant…” and in the sentence at the end of Introduction “The goal…”

* The word “inside” has been changed with the word “with” in the title, as well as in two more sentences in the Abstract and at the end of the Introduction part (colored in green).

2. Procedure for liposomes preparation is still confusing. Why did you use centrifugation step at the end and then diluted supernatant? Centrifugation speed is too low to settle down liposomes? What did you separate by this step, some agglomerates?

* Yes, the centrifugation step has been used in order to settle down agglomerates and eventually formed Crts aggregates. This sentence is inserted in the “*Liposomes preparation*” part.

3. According to the all done changes in the manuscript, Summary in Serbian should be modified as well.

* The Serbian title has been changed and one sentence in ИЗВОД as well.

4. Generally, since the emphasis of the work is given on mechanism of Crts interaction with phospholipids, I suggest exclusion of the Fig 2. (SEM images-these are not very representative).

* The Fig.2 is excluded and moved in the Supplementary material.

The liposomes are used as a model of biomembranes to investigate Crts activity. In order to improve incorporation of Crts and prove their incorporation inside lipid bilayer of liposomes such procedure has been used. Crts, as lipophilic agents with significant differences in their own structure and polarity, are challenging concerning incorporation inside liposome bilayers. This procedure has been developed and refined with Anna Wisniewska from Faculty of Biochemistry, Biophysics and Biotechnology, Jagiellonian University, Kraków, Poland; it is also described in her papers about lutein and zeaxanthin position inside liposomes bilayer.

Concerning Crts aggregation, it has been mentioned that aggregates show significant spectra changes as it is shown on the figure below.



Since there are no spectra changes in our samples of incorporated Crts (Fig. S2), we have concluded that there are no aggregates, i.e. that Crts are inside lipophilic environment and there is no contact with water.

Finally, the technical corrections are also made through the text (colored in green). Since the Fig.2 is excluded, numbers of other Figures (following) are corrected and they are uploaded again under new titles. Figure 1 is the same as in the first submission.

In the same time, quality and resolution of FTIR spectra (Figs. 2&3) are improved.