

Response to Reviewers Comments

Dear Editors and Reviewers:

Thank you for the reviewers' comments concerning our manuscript entitled "Effect of catechin on yolk immunoglobulin structure and properties: A polyphenol-protein interaction approach" (foods-2108724). Those comments are all valuable and very helpful for revising and improving our paper. We have studied comments carefully and have made correction which we hope meet with approval. The main corrections in the paper and the responds to the reviewers' comments are as following:

Reviewer: 1

Comments and Suggestions for Authors

I reviewed the manuscript entitled, Effect of catechin on yolk immunoglobulin structure and properties: A polyphenol-protein interaction approach. The study is well planned and executed in a systematic way. However, authors should consider below suggestions.

Answer: We thank the reviewer for the positive feedback. We have endeavored to revise the manuscript as recommended by the reviewer. We had rewritten many parts of this paper and some mistakes were revised. What's more, we supplemented the section of discussion and compared with literature. The revised content is shown with yellow background highlight in our revised manuscript.

1. Abstract

Background of the study should be introduced before introducing research objectives

Research objectives are not clear. Please revise to identify easily

Keywords should be revised. All the keywords are matching with the words in title

Answer: Thanks for the reviewer's comment. According to the reviewer's suggestion, we have added the background and objectives of this manuscript and revise the keywords. Please refer to line 13-16.

2. Introduction

Citation format is not according to the journal format

Answer: In the revised version, all of citations have been revised according to the journal format.

2.1 Line 62: Whey Protein Isolation? whey protein isolate?

Answer: Thanks for the reviewer's suggestions. Due to our mistake, the "whey protein isolate" was written as "Whey Protein Isolation", and we have corrected it. Please refer to line 62.

2.2 Line 64: Tea polyphenols should be revised as tea polyphenols

Answer: Thanks for the reviewer's comment. We have made a radical correction to the case of this manuscript. Please refer to line 63.

2.3 Line 68: scientific name must be in Italics

Answer: In the revised version, the scientific name 'Lates calcarifer' has been revised to *Lates calcarifer* according to the reviewer's suggestion. Please refer to line 67.

2.4 Line 80: Three-dimensional should be revised as three-dimensional. Authors should avoid using unnecessary capital letters in the middle of text unless it is necessary.

Answer: Thanks for the reviewer's comments. We have revised the 'Three-dimensional' as 'three-dimensional'. We have made correction according to the reviewer's comments and made a radical correction to the case of this manuscript. Please refer to line 78.

2.5 Line 94: Salicylic acid..s should be lowercase letter. Likewise, please revise throughout the manuscript

Answer: We have carefully revised the manuscript as recommended by the reviewer, and all of capital letter errors of this manuscript have been corrected. Please refer to

line 91.

2.6 Line 96; *Escherichia coli* and *Staphylococcus aureus* were from the microbiology lab teacher. Please revise it. Microbiology lab teacher? This is not the correct way of academic writing

Answer: We are really sorry for our mistakes of academic writing. Thank the reviewer for the reminder. The original sentence was revised “*Escherichia coli* and *Staphylococcus aureus* were obtained from the microbiology lab of Food and Bioengineering college, Henan University of Science and Technology”. Please refer to line 92-95.

3.1 Section 2.4. Please write the name of the UV instrument, model, company name, location, city and country. Also, provide the reference

Answer: Thanks for the reviewer’s suggestions. We have supplement the information of the UV instrument and provided reference. Please refer to line 116-117.

3.2 Section 2.5. please write the name of Fluorescence spectroscopy instrument, model, company name, location, city and country. Also, provide the reference

Answer: According to the reviewer’s comment, we have added the name of Fluorescence spectroscopy instrument, model, company name, location, city and country and provided the reference. Please refer to line 121-123.

3.3 Section 2.7.2. OH free radical scavenging rate: Please the citation

Answer: Thanks for the reviewer’s suggestions. We have supplement the citation of this section and reference as [20]. Please refer to line 159.

3.4 Section 2.11. Rheological analysis: please write the name of the rheometer used, model, company name, location, city and country. Also, provide the reference

Answer: As suggested by the reviewer, we have added the information of the rheometer used and supplement the reference. Please refer to line 177-177.

4. Include the section statistical analysis

Answer: Thanks for the reviewer's suggestions. We have added statistical analysis in Materials and Methods section. Please refer to line 178-182.

4.1 Line 182: The result obtained was shown in Figure 1.. can be revised as The results are shown in Figure 1

Answer: We sincerely appreciate the reviewer's comment. And we have revised the sentence according to the suggestion. Please refer to line 191.

4.2 Section 3.1. and 3.2. There is no discussion and comparison with available literature. This section is very weak

Answer: According to the review's suggestion, we added the detail discussion. Also, we cited the original work, referenced as [22] and [23], respectively. Please refer to line 188-190; 192-195; 209-212.

4.3 Figure 2. legend lines look similar. I suggest to revise and change legends to different color or symbols

Answer: It is really a great suggestion on provides the sensitivity and specificity in our paper. Figure 2 has been modified as suggested by the reviewer. Please refer to figure 2.

4.4 Figure 3. legend lines look similar. I suggest to revise and change legends to different color or symbols

Answer: Thanks for the reviewer's suggestions. Figure 3 has been modified as suggested by the reviewer. Please refer to figure 3.

4.5 Section 3.3. Fluorescence spectroscopy: discussion should be improved and compare with available literature

Answer: Thanks for the reviewer's suggestion. We have improved and compared with

available literature on the results of fluorescence spectroscopy analysis of the interaction between IgY and catechin, referenced as [24]. Please refer to line 227-233.

4.6 Figure 4. axis of Figure 4 (X, Y, Z) is unreadable and I don't understand it because of low clarity. Please improve the quality of the Figure 4

Answer: We are sorry for this picture causing the reviewers to not understand. First of all, I'd like to give a picture explanation to the reviewers. The three-dimensional fluorescence spectrum is a matrix spectrum (Excitation—Emission—Intensity) characterized by three-dimensional coordinates of excitation wavelength (Y axis), emission wavelength (X axis) and fluorescence intensity (Z axis). In this study, we further studied that catechins changed the secondary structure of IgY by using three-dimensional spectroscopy, mainly manifested as the decrease of fluorescence intensity of peak 1 and peak 2. Because of the space of these figures is limited, We have improved the figures and added icons to clearly show the results of the study. Please refer to figure 4.

4.7 Line 284: escherichia coli, E should be capital letter and staphylococcus, S should be capital. Please revise the same in Figure 6

Answer: We are very grateful to Reviewer for reviewing the paper so carefully. We have revised the mistake. Please refer to figure 6.

4.8 Section 3.7. please improve the discussion and compare with literature

Answer: Thanks for the reviewer's suggestion. According to the reviewers' opinions, we found that Section 3.7 had reference, but Section 3.6 lacked the comparative literature. So we have supplemented the comparison with other research in the conclusion part, referenced as [29]. Besides, we also supplemented the discussion of section 3.7. Please refer to line 296-299; 301-302; 306-308 and 312-313.

4.9 Section 3.9. please improve the discussion and compare with literature

Answer: Thanks for the reviewer's suggestion. We have supplemented the

comparison with other researches and discussion on the results of DSC analysis of the interaction between IgY and catechin. The modification is as follows:

“The thermal stability of proteins was related to their amino acid composition, and the thermal stability of proteins with a higher ratio of hydrophobic amino acids was more stable to proteins with a lower ratio of hydrophilic amino acids generally. The reason may be that the combination of catechin and IgY affected the hydrophobic and electrostatic interaction of protein molecules, the IgY globular structure was destroyed by catechin, which resulting in the decrease of thermal stability. The result was in line with the study that the interaction of squid mantle protein with a mixture of potato and corn starch explored by Luis et al. The T_m values in extruded samples were directly proportional to the squid content and the amine groups I and II responsible for the protein-protein interaction reduced and the O-glucosidic bonds increased.”

Referenced as [32]. Please refer to line 345-347; 349-358.

4.10 References are not according to the journal format. Please revise it point-by-point

Answer: Thanks for the reviewer’s suggestion. We are very sorry that the references format of this manuscript is not conform to the journal format. We have revised the referenced of the paper according to the journal format.

The above contents are my responses to the reviewers’ valuable questions and suggestion. Thank the reviewers very much for the patience. Their patience and high quality advice have helped us a lot, and we have learned a lot in the process of improving my paper. We tried our best to improve the manuscript and made some changes in the paper.

Once again appreciate for Editors and Reviewers’ warmwork earnestly, and hope that the correction will meet with approval. We wish the editors and reviewers good health and happy life.

