Gmail @gmail.com>

Fwd: Response to reviewer manuscript FOODHYD_2017_193

Vilia Darma Paramita rmit.edu.au> Mon, Jun 19, 2017 at 8:08 PM
To: ita dharma @gmail.com>

On 9 March 2017 at 07:05, Stefan Kasapis @rmit.edu.au> wrote: Hi Vilia,

we have now received comments for our paper.

Please prepare a response next week. These are very publishable comments and I am sure the paper will be published this month.

Your response for each comment has to be short and to the point. I don't think we need to revise the manuscript.

Meanwhile, please finalise the work for honey today as discussed.

Cheers, Stefan

---------- Forwarded message ----------
From: **Stefan Kasapis** < @gmail.com>
Date: 9 March 2017 at 06:19
Subject: Fwd: Invitation to revise manuscript FOODHYD_2017_193
To: @rmit.edu.au

> ---------- Forwarded message ----------
> From: **Pete Williams (Food Hydrocolloids)** <EviseSupport@elsevier.com>
> Date: 9 March 2017 at 03:01
> Subject: Invitation to revise manuscript FOODHYD_2017_193
> To: @gmail.com
>
> Ref: FOODHYD_2017_193
> Title: EFFECT OF CO-SOLUTE CONCENTRATION ON THE DIFFUSION OF LINOLEIC ACID FROM WHEY PROTEIN MATRICES
> Journal: Food Hydrocolloids

Dear Professor. Kasapis,

Thank you for submitting your manuscript to Food Hydrocolloids. We have completed the review of your manuscript. A summary is appended below. While revising the paper please consider the reviewers' comments carefully. We look forward to receiving your detailed response and your revised manuscript.

To submit your revised manuscript:

- Log into EVISE® at: http://www.evise.com/evise/faces/pages/navigation/NavController.jspx?JRNL_ACR=FOODHYD
- Locate your manuscript under the header 'My Submissions that need Revisions' on your 'My Author Tasks' view
- Click on 'Agree to Revise'
- Make the required edits
- Click on 'Complete Submission' to approve

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- R code viewer: The R code viewer presents computer code in the R language, together with any relevant data files, for easy inspection with the article. Please submit R-code and data as supplementary material with your article.

I look forward to receiving your revised manuscript as soon as possible.

Kind regards,

Professor Williams
Editor-in-Chief
Food Hydrocolloids

Comments from the editors and reviewers:
-Reviewer 1

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The paper by Paramita, Lo Piccolo and Kasapis deals with the effect of co-solute (glucose syrup) addition to whey protein matrices in relation to the diffusion kinetics of an essential fatty acid (linoleic acid). It constitutes a systematic study on the variation of the diffusion coefficient of linoleic acid through the plasticised glassy matrix of the protein and should be published once the following have been addressed in a minor revision:

1) Introduction (lines 82-84), explain better the statement that vitrification is governed by free volume and is independent of the chemical features of the polymer. Why should that be the case?

2) Materials and Methods (lines 137-139), how do we ensure that the structural transition of glucose syrup does not interfere/obscure the thermal profile of viscoelasticity of whey protein in the mixture?

3) Results and Discussion (lines 266-267), why is the interest in this study on the structural properties of whey protein (80% solids) in the native conformation without implementing a heating step? That would have unveiled additional insights into this type of work.

4) In Table 1, it is not clear how the choice of reference temperature (To) was made in relation to the glass transition region and the glass transition temperature (Tg) for the subsequent modeling.

5) In Figures 1 and 3a, the viscoelastic profile of 100% whey protein is distinct from that of 100% glucose syrup. On what basis then it is assumed that both systems undergo a glass transition within the same temperature range?

6) In Figure 7a, the percentage of linoleic acid release is rather low compared to the timescale of diffusion study. Discuss why this setting has been chosen and what is the effect of the whey protein matrix on the diffusion of fatty acid.

-**Reviewer 2**

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The effect of co-solute concentration on the diffusion of linoleic acid from whey protein matrices was presented at this study. The structure of the manuscript and the experiments are well defined and exposed.

Comments:

- Line 289 and Table 1:

The tan delta at 20 degrees Celsius was reported. It will be valuable to note the tan delta of the whey protein/glucose syrup matrices at sub-zero temperatures.

- The X-ray measurements were performed with freeze dried samples. How these measurements represent the state of the samples below their glass transition conditions?

- Figure 7a: the Linoleic acid release was estimated about 12.5% after 9 hours. This is a slow release behaviour and could be also related to the errosion of the whey protein/glucose syrup/linoleic acid layer (rather than only the diffusion of Linoleic acid). Any evidences that the protein/glucose syrup/linoleic acid layer remained intact ?

- Figure 8b:
Figure 8b shows the diffusion coefficients of linoleic acid in whey protein/glucose syrup matrices as a function of $T\text{-}T_g$. However, the diffusion coefficients as a function of time (equation 3) will be also valuable to discuss and to correlate with the diffusion properties.

Table 1:
It is known that the activation energy reflect the molecular interactions between matrix and diffusing medium. Thus higher activation energies could indicate a stronger interaction between linoleic acid and whey protein/glucose syrup matrices. The higher activation energies found at 0:100 samples (193 kJ/mol) which could also indicate a lower linoleic acid diffusivity. This is not in agreement with release data of figure 7.