Reviewer's report

Title: Activation of transcription factor AP-1 in response to thermal injury in rat small intestine and IEC-6 cells

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Reviewer: Michael Schumann

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Major Compulsory Revisions

The paper by Zhao et al. suggests a role for AP1 in hyperthermia-altered gene expression. It includes a number of sophisticated experimental approaches as EMS and supershift to uncover the role of transcription factor for hyperthermia. However, differences to previously published work (Cippitelli et al., J Immunol. 2005 Jan 1;174(1):223-32.) on AP1 and NFkappaB should be delineated more specifically. Otherwise the manuscript is excellent and should be published after completion of the suggestions below with high priority.

Major points:

1. Figure 4: The reader can appreciate a higher proportion of shedded, presumably dead cells on a IEC-6-layer. The %-survival needs to be clarified. A staining of the epithelial layer (e.g. IF for cadherin) in combination with an apoptosis assay would demonstrate the heat stress better. Determining a transepithelial electrical resistance (TER) for filter grown IEC-6 might be good global read-out to quantify the epithelial defect induced.

Minor points:

1. Figure 3 should be incorporated in Figure 2

2. Legend figure 4 should include the information, how %-survival was actually analyzed. Is it the MTT assay mentioned in the methods? In that case it would be rather proliferation.

3. Figure 6 legend, 2nd sentence needs to be rewritten.

4. Legend Figure 7B: The results text indicates that Fig7B-data are IEC6. Please add this information also to the legend.

5. Consider to add Fig. S1A to Figure 5.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.