Reviewer's report

Title: 1HNMR-based Metabonomic profile of Rats with Experimental Acute Pancreatitis: a controlled experiment

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Reviewer: Nigel Turner

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In this manuscript Li et al have examined the metabolite profile of plasma, 12 hrs after the induction of experimental induction of acute pancreatitis in rats. They observed changes in a number of key metabolites and propose that these metabolites may serve as biomarkers for acute pancreatitis. Some issues require attention.

Major Compulsory Revisions

1) The authors do not provide any evidence for the effectiveness of the sodium taurochlorate treatment in inducing pancreatitis in their model (e.g. histological or biochemical evidence of pancreatic inflammation). This is a limitation of the study and at the very least they should provide a reference to previous literature that has successfully used this experimental approach (i.e. dose and timing) to induce pancreatitis.

2) Several of the changes seen in metabolites are not consistent with what has been observed in serum or urine samples from patients with pancreatitis (Ref 22 and 24). For example, although TMAO changes in a similar direction to that in ref 24, 3-hydroxybutyrate is reduced in humans with pancreatitis (ref 24), but increased in the current rodent model. Similarly, lactate levels are increased in this rodent model, but are not substantially altered in urine of humans with acute or chronic pancreatitis (Ref 22). These inconsistencies are concerning, given the authors' proposal to use the metabolites in the current study as biomarkers for pancreatitis. Some additional discussion of this point is needed, including experimental differences that may explain these discrepancies, as well as reference to other available metabolite data in this area from animal models and humans.

3) In the discussion, the authors have made very definitive conclusions about the observed metabolite changes and how these relate to changes in biological parameters/pathways. However, they do not provide any references to back up their assumptions/conclusions on what their data means. For example, an increase in unsaturated fatty acids in the circulation could occur for multiple reasons (e.g. altered uptake or utilisation of lipids), but the authors have concluded that this must reflect a release of fatty acids from from membrane lipids and a subsequent change in cell membrane stability. There is no reference for this or discussion of what else a change in circulating unsaturated fatty acids could signify. This is similar for most of the metabolites and this section needs to
be improved dramatically.

**Level of interest:** An article of limited interest

**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