Reviewer's report

Title: Cardioprotective Effect of Danshen and Gegen Decoction on Rat Hearts and Cardiomyocytes with Post-ischemia Reperfusion Injury

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Reviewer: Liang-Wu Fu

Reviewer's report:

This study investigated the cardioprotective effect of Danshen and Gegen (DG) decoction on rat hearts and cardiomyocytes with post-ischemia reperfusion injury. The authors tested their hypothesis that “DG exerts a cardiac protective effect against post-ischemic reperfusion injury.” However, previous studies have demonstrated that DG exerts cardio-protection effect against ischemia/reperfusion injury in rats and H9c2 cardiomyocytes (Chiu et al, 2011a, 2011b, and 2012). There are major concerns regard with the data novelty, quality of DG decoction, data presentation and interpretations.

Major concerns:

1. The quality control of DG decoction is not clear:
   There are many active components in a DG decoction (Chang et al, 2009). However, the authors' previous study (Lam et al, 2010) and current study have not provide the information with regard to the active components in the DG decoction used in the present study, which is needed for evaluating the reproducibility of the material.

2. The novelty of this study are limited:
   Leakage of LDH and CK from ischemia/reperfusion heart – not new data.
   Increase in coronary flow recovery – not new data.
   Decrease in apoptosis and cytochrome-c in H9c2 cardiomyocytes – not new data.
   Increase in troponin expression and – kind of new data, but did not provide the significance of this change.
   Inhibition of hypoxia/reoxygenation induced elevation of cytosolic calcium ion – new data.

3. Abstract: the previous studies of DG protecting the myocardium against ischemia/reperfusion injury, which is more relevant to the present study, should be mentioned here.

4. Background: the relationship between the variables being investigated and the cardiac protective effect of DG is not clear. Please clarify. In addition, the update information on the cardiac protective influences of DG, which is important related to the present study has not provided appropriately.
5. Methods and materials: what was the pH and osmolarity of DG solution? Particularly considering a current ex vivo study. Have the authors dried DG decoction to be powder?

6. Results section:
In Figure 1 A through B, it is not clear when the differences between control and treatments groups are significant. For instance, in Figure 1A, DG (0.4mg/200 µl) vs. ctrl, are the differences significant at 1 min, 2 min, … or 15 min? or every min? In Figure 2 through Figure 7, what is the meaning of “n=3”?

7. Discussion: the interpretations of the present data are not appropriate. For instance, the detailed information with regard to the cardiac protective effect of DG from previous studies is needed to show what has been done. What are the new findings made in the present study? What are the study limitations of the present study?

Minor concerns

1. There are some grammar problems with this manuscript, particularly in the Abstract section. For instance, on page 3, line 5 “…exhibiting anti-atherosclerosis effect improving the patient…” may be “exhibiting anti-atherosclerosis effect and improving the patient…” or “exhibiting anti-atherosclerosis effect, which improves the patient…”

on page 3, line 7 “ex vivo and in vitro” should be “ex vivo or in vitro”; on page 3, line 6 “we want to further investigate” should be “we investigated”.

2. Some redundancies in discussion vs. results section:
Page 20, many sentences in paragraph 2 are redundant vs. para 1 on page 15;

Page 21, many sentences in para 2 are redundant vs. para 3 on page 16 to para 1 on page 18.

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

**Quality of written English:** Needs some language corrections before being published

**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' below.