Reviewer’s report

Title: The inhibitory effect of Isoliquiritigenin on the proliferation of human arterial smooth muscle cell

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Reviewer: Lori T Raetzman

Reviewer’s report:

The manuscript by Chen et al explores the effect of ISL exposure on human vascular smooth muscle cell proliferation and reactive oxygen species production in vitro. They find that ISL substantially reduces proliferation and this is accompanied by an increase in p27 and a decrease in two cyclins examined. Additionally, ISL treatment led to an increase in SOD and a concomitant decrease in ROS, that, in part, may be the reason for decreased proliferation. Finally the AKT signaling pathway may also contribute to the effects of ISL. Overall this is an important study as the first steps looking at the potential for ISL to be of therapeutic benefit in the progression of atherosclerosis. More detailed description of some of the methods, especially the cell culturing conditions, and more discussion would improve the manuscript. The following comments are offered:

In the materials and methods, it is stated that the cells used as a control were untreated cells. Please clarify if the control cell culture media contained the vehicle used to dissolve the ISL or had no treatment.

A better, more detailed description of the nature of the cell line being used, including if it is immortalized or primary, should be given.

In the materials and methods, add the purity of ISL that was purchased from Sigma.

The assay described as cell growth in Figure 1a is an assay of cell number. The axis label in the figure, cell viability, is a better descriptor than cell growth. Please change the reference to this assay in materials and methods and in the results.

Please comment on how the doses of ISL used in this study correlate with levels that might be given in a therapeutic context.

Although it is clear that the ISL caused an inhibition of proliferation, were the cells otherwise healthy? Did they undergo cell death or autophagy upon ISL exposure?

Another main effect of ISL in other systems is to act as a botanical estrogen, augmenting or interfering with normal hormone signaling. Is this a possibility in the HASMCs? Do these cells have steroid hormone receptors? This should be discussed.

The manuscript needs to be read and edited by a native English speaker to address grammar.
Are the methods appropriate and well described?  
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls? 
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown? 
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review? 
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English 
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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