Reviewer's report

Title: Protective effect of AVS073, a poly herbal formula, against UVA-induced melanogenesis through a redox mechanism involving glutathione-related antioxidant defense

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Reviewer: Vivienne E Reeve

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A well-described study demonstrating the anti-melanogenic potential of a commercial herbal extract. A few minor comments follow:

1. The quantitation of the GA, at 0.03 % of the extract, seems very low. Other phenolics appeared to be present at higher levels from the TLC chromatograms. Is the GA content critical for anti-melanogenesis compared with the other compounds identified? Also on page 7, para 1 last line, ‘...AVS073 powder (100 mg/ml)....’, is this unit meaningful, when the GA concentration is given in %w/w, that must apply to the whole dried extract?

2. In Fig 1A, it is not clear what are the 15 components? How does Fig 1B differ from these 15 analyses, and what are ‘Wattana recipe 1-3?’ The densitometric traces are not very informative unless the peaks can be labelled. How does this analysis compare with the scans in Fig 2? And what samples were used in the UHPLC analysis?

3. In Results, page 14 para 1, the UVA dose for Fig 3A and B is shown on the graph as 8 J/cm² (not 16 J/cm²). In para 2, the “concentration-dependent inhibition” for GA is not apparent in Fig 5B.

4. Results page 15, para 2, line 4: ‘....a rise in tyrosinase mRNA expression (1.2 +/- 2.1-fold....) does not appear to be correct from the figure.

Level of interest: An article of importance 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