Reviewer's report

Title: Fucoidan present in brown algae induces apoptosis of HT-29 human colon cancer cells

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Reviewer: Arun Rishi

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This manuscript by kim et al investigates apoptotic effects and mechanisms of an algal derivative Fucoidan in colon cancer cells. Fucoidan has been previously shown to be active against a number of pathologies and was also found to induce anti-tumor effects in a variety of cancer cell types. In the current study, the authors investigate growth inhibition of HT-29 colon cancer cells by this agent. In reference to the colon cancer model however this agent was previously shown to inhibit growth of HCT-116 colon cancer cells albeit at much higher doses than that used in current study. Although, most of the experiments are well controlled and data are clearly interpreted, the rationale for conducting the in vitro studies utilizing a different cell line nonetheless is modest. The manuscript in general is well written albeit could benefit from further editing. The data however are good quality with appropriate statistical analyses where applicable. The other interesting feature of these studies is lack of toxicity of this compound in FHC human normal colon epithelial cells. The experimental analyses are well detailed and systematic in elucidating activation of apoptotic signalling pathways by this agent. Specifically, the authors measure the end-points of cell growth inhibition and apoptosis by this agent in a dose and time-dependent manner in figures 1 and 2. In the subsequent figures, the authors focus on determining expression and/or activation of a range of cellular apoptosis transducing factors including caspases, pro-, and anti-apoptotic proteins that are well known to transduce the extrinsic as well as intrinsic apoptosis pathways. The conclusions are well supported by the data presented in various figures. A minor concern is an apparent discrepancy in the data in figures 1A and 2C. In figure 1A, treatment with 20 microgram per ml dose of fucoidan results in 25% viable cells while in figure 2C the histogram indicates 62% live cells following similar treatment. Authors need to clarify this discrepancy in the results section.

Overall, the studies are generally well presented with appropriate controls, and the data by and large support the conclusions.

Level of interest: An article whose findings are important to those with closely related research interests

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.