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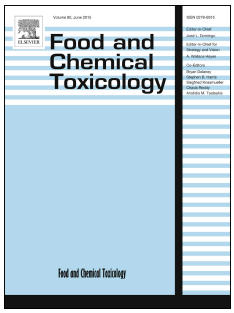

Red seaweeds for obesity prevention?

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Letter to the Editor

Red seaweeds for obesity prevention?

To the Editor,

I read the recent paper by Min-Cheol Kang and coworkers on the latest issue of this Journal, where the authors reported that the popular edible seaweed *Gelidium amansii*, an economical important species of red algae, showed a protective activity on obese C57BL/6 mice (Kang et al., 2016). Alcoholic extracts of the seaweed (GAE) were able to inhibit the expression of adipogenetic and differentiation genes, such as CCAAT/enhancer-binding protein (C/EBP-α), peroxidase proliferator activated receptor gamma (PPAR-γ) and sterol regulatory element binding protein 1 (SREBP-1), in an *in vitro* 3T3-L1 cell line, and moreover reduce lipid pattern in circulating blood and liver steatosis, when compared to high fat diet (HFD) treated animals (Kang et al., 2016). *In vitro* studies showed that extract from this edible red seaweed could reduce lipid accumulation and reactive oxygen species in 3T3-L1 adipocyte cell line (Seo et al., 2012). This ability was confirmed with a further species of the *Gelidium* genus (Jeon et al., 2014) and also for the red alga *Gracilaria verrucosa* (Woo et al., 2013). Similar results were reported also for the edible brown alga *Ecklonia stolonifera* containing phlorotannins and fucosterol (Jung et al., 2014a; Jung et al., 2014b). This encouraging evidence should justify the interesting research report by Min-Cheol Kang and coworkers but the anti-adipogenetic and anti-obesity potential of this red algae, although assessed on *in vitro* and laboratory animals, deserves some further comment for human health, due to the many complex issues raised when addressing a clinical and medical argument. The observed effect appears to be associated with red algae extract when testing in an *in vitro* experimental setting, apparently aside from genus belonging. This comment tries to elicidate if the effect observed by the authors are from a more generalized cause rather than defined active principles contained in the genus *Gelididium*, in order to assess if purified components may be somehow considered for human health.

The main important issue to be addressed is how seaweed, included in the diet, may improve metabolic balance and prevent obesity. In this perspective, we are compelled to distinguish some ecouraging *in vitro* evidence (where seaweed is used as an extract) from the use of edible seaweeds in some kind of dietary habits. Clinical trials are needed, though animal models appear quite encouraging. A hypothesis of the anti-obesity potential of GAE has been recently forwarded, as GAE should lower TNF-α and plasminogen activator inhibitor-1 (PAI-1) secretion, the TNF-α