The macroalga *Ulva rigida* affords genome protection to *Drosophila melanogaster* via dietary supplementation

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Currently, marine macroalgae have been defended as functional food, due to their beneficial properties (*e.g.* anti-inflammatory, immunomodulatory and anti-tumour). In contrast, their genome's protective potential is still poorly studied, albeit some evidences about their antioxidant, antigenotoxic and antimutagenic effects. The green alga *Ulva rigida* is an edible species, native in the Atlantic coast and easily grown in aquaculture, although it is underexplored regarding its biomedical/nutraceutical potential. Yet, some studies reported the antigenotoxicity of *U. rigida* and *U. fasciata* extracts and the antioxidant potential of *U. lactuca* extract, suggesting that species of *Ulva* genus may increase genome protection. Nevertheless, it must be pointed that those studies evaluated only the effects of algae extracts through *in vitro* trials, disclosing a gap of knowledge about *in vivo* effects of the whole algae ingestion on genome integrity maintenance. Hence, our goal was the search for beneficial effects of *U. rigida*, through an increased genome protection, aiming a functional characterization of healthy foods and human health promotion. For that, the antigenotoxic potential of *U. rigida* was assessed in *Drosophila melanogaster* following a dietary exposure, and against an exposure to streptonigrin (mutagenic agent). Thus, somatic mutation and recombination test (SMART) and comet assay were adopted, measuring somatic mutations/recombination events and DNA breaks, respectively. Two concentrations of *U. rigida* were tested and groups were distributed according to the following conditions: C (control); 2.5U/5.0U (2.5 or 5.0% of *U. rigida* supplementation); S (streptonigrin); 2.5U+S/5.0U+S (2.5 or 5.0% of *U. rigida* supplem. + streptonigrin). Regarding the antigenotoxic potential measured through SMART, both alga doses were beneficial against the streptonigrin-induced damage, though no differences were observed between them. In parallel, both levels of diet supplementation with *U. rigida* revealed their antigenotoxic ability only against DNA breaks induced by streptonigrin and, in this case, 5.0U revealed higher antigenotoxic potential than 2.5U. Overall, a diet supplemented with *U. rigida* showed to promote genome protection in *D. melanogaster*, particularly against damage induced by streptonigrin. These findings may contribute to the algaculture industry development, as well as the reinforcement of the idea of algae as functional food.