

Review

## Potential Bioactive Compounds from Seaweed for Diabetes Management

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**Abstract:** Diabetes mellitus is a group of metabolic disorders of the endocrine system characterised by hyperglycaemia. Type II diabetes mellitus (T2DM) constitutes the majority of diabetes cases around the world and are due to unhealthy diet, sedentary lifestyle, as well as rise of obesity in the population, which warrants the search for new preventive and treatment strategies. Improved comprehension of T2DM pathophysiology provided various new agents and approaches against T2DM including via nutritional and lifestyle interventions. Seaweeds are rich in dietary fibres, unsaturated fatty acids, and polyphenolic compounds. Many of these seaweed compositions have been reported to be beneficial to human health including in managing diabetes. In this review, we discussed the diversity of seaweed composition and bioactive compounds which are potentially useful in preventing or managing T2DM by targeting various pharmacologically relevant routes including inhibition of enzymes such as  $\alpha$ -glucosidase,  $\alpha$ -amylase, lipase, aldose reductase, protein tyrosine phosphatase 1B (PTP1B) and dipeptidyl-peptidase-4 (DPP-4). Other mechanisms of action identified, such as anti-inflammatory, induction of hepatic antioxidant enzymes' activities, stimulation of glucose transport and incretin hormones release, as well as  $\beta$ -cell cytoprotection, were also discussed by taking into consideration numerous *in vitro*, *in vivo*, and human studies involving seaweed and seaweed-derived agents.