Indian Journal of Animal Sciences **94** (4): 291–300, April 2024/Review Article
https://doi.org/10.56093/ijans.v94i4.144829

Seaweed as a functional feed supplement in animal diet–A review

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Received: 13 November 2023; Accepted: 22 February 2024

Supplementary Table 1. Different bioactive compounds present in the seaweeds

Major compound	Bioactive compound	Functional role
Sulfated polysaccharides	Galactans	Prebiotics, anti-bacterial, anti-viral, antitumor
	Fucoidans	Anti-inflammatory, anti-bacterial, anti-viral, anti-oxidative
Major polysaccharides	Laminarin	Prebiotics, anti-bacterial, anti-viral, anti-oxidative
	Alginate	Thickening, stabilizing, anti-inflammatory, anti-bacterial
Proteins	Lectin	Anti-inflammatory, anti-bacterial, anti-viral
PUFA	Omega-3 Fatty acids	Prevents heart blockages
Pigments	Carotenoids	Beta-carotene is a strong antioxidant
	Phycobiliprotein	Anti-oxidative, anti-viral, anti-inflammatory, neuroprotective
Polyphenols	Phenolic acid, flavonoids	Anti-oxidative
	phlorotannins	Enhance host disease resistance, antioxidant
Minerals	Organic minerals	Ca, K, Na, Mg

PUFA, Polyunsaturated fatty acids.

Supplementary Table 2. Antimicrobial activity of seaweeds

Seaweed spp.	Pathogenic microbial spp.	Functional group	Findings	Reference
Himanthalia elongata (Brown)	*E. faecalis and P. aeruginosa L. monocytogenes and S. abony*	Phenolic content and condensed tannins	60% methanol extract of *H. elongata* showed highest activity against all tested microbes.	Rajauria *et al*. (2013)
Callophycus serratus (Red)	*Plasmodium falciparum*	Bromophycolides J-Q	All the selected bromophycolides showed activity against human malaria parasite.	Lane *et al*. (2009)
Ceramium rubrum (Red), *Sargassum vulgare, Sargassum fusiforme* and *Padina pavonia* (Brown)	*Pseudomonas aeroginosa, Staph. aureus, Shiegella flexineri, E. coli, Klebsiella pneumoniae*	Phenols, terpenes, acetogenins, indoles, fatty acids and volatile halogenated hydrocarbons	*S. fusiforme and S. vulgare* showed max activity against *S. aureus* and *K. pneumoniae*	El Shafay *et al*. (2016)
Himanthalia elongate (Brown)	*Salmonella spp., L. monocytogenes, E. coli, S. aureus, and Bacillus cereus*	Phenolic compounds and phlorotannins	More efficient against *L. monocytogenes* and *B. cereus*	Martelli *et al*. (2020)
Eucheuma spinosum (Red)	*S. aureus*	Alkaloids and saponins	10% - MIC 15% - MBC	Safitri *et al*. (2018)
Kappaphycus alvarezii (Red)	*S.aureus, B. cereus, E. coli, K. pneumoniae, Pseudomonas aeroginosa*	Phenolic compounds, tannins, and terpenes	Showed activity against *S. aureus and E. coli*	Prabha *et al*. (2013)

MIC, Minimum inhibitory concentration; MIC, Minimum bactericidal concentration.