



## ANTI-DIABETIC POTENTIAL OF *Spatoglossum asperum* (BROWN SEAWEED); INSILICO MODEL

ANDREWS SEKAR<sup>1</sup>, GURUSAMY CHELLADURAI<sup>2</sup>,  
SUBRAMANYAN VAITHILINGAM<sup>3</sup>, ARJUN PANDIAN<sup>4</sup>

AZHAGU MADHAVAN SIVALINGAM<sup>5</sup> AND GANESAN SIVAMANI<sup>6</sup>

<sup>1</sup> PG & Research Department of Zoology, A.V.V.M. Sri Pongam College (An Autonomous Institution Affiliated to Bharathidasan University), Ponnai, Thanjavur 613103, Tamil Nadu, India.

<sup>2</sup> Department of Zoology, G. Venkateswamy Naidu College (Autonomous), Kottipatti-628502, Tamil Nadu, India.

<sup>3</sup> PG and Research Department of Biotechnology, JJ College of Arts and Science College (Autonomous), Paludurai, Tamil Nadu-622423, India.

<sup>4</sup> Division of Research & Innovation, Department of Biotechnology, Sreevishva School of Engineering (SSE), Sreevishva Institute of Medical and Technical Sciences (SIMATS), Thandalem, Chennai - 602105, Tamil Nadu, India.

<sup>5</sup> Department of Community Medicine, Sreevishva Medical College, Sreevishva Institute of Medical and Technical Sciences (SIMATS), Thandalem, Chennai - 602105, Tamil Nadu, India.

### AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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(1) Dr. Ana Cláudia Correia Ouellet, University of Trás-os-Montes and Alto Douro, Portugal.

### Keywords:

(1) Mingwei Zhang, University of Connecticut, USA.

(2) A. Nirmala, Aarupada Veda Institute of Technology, India.

(3) Kateryna Semchuk, National University of Pharmacy, Ukraine.

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### ABSTRACT

This study used GC-MS analysis and computational biology to examine the diabetic effect of bioactive substances obtained from brown seaweed. Using AutoDock-Vina in PyMol 4.2, the molecular docking of *Spatoglossum asperum* on the human PPARG-protein was determined and compared to that of the well-known PPARG-agonist Glimepiride. The analysis the active components of seaweed extracts is the main focus of the current investigation. 12 substances were discovered using GC-MS analysis and evaluated using AutoDock-Vina against PPARG. Docking score showed that the existing phytochemical 9-Octadecenoic Acid (Z)-, Octadecyl Ester, obtained from seaweed, has the highest fitness score of -1085.9 kcal/mol and may therefore be a potent anti-diabetic drug. This study could result in the creation of brand-new marine nutraceuticals that use brown seaweed to treat a number of diseases.

\*Corresponding author. Email: gurusamychelladurai@gmail.com

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## Effect of seaweed liquid extract as an organic biostimulant on the growth, fatty acids and high-value pigment production of *Vigna radiata*

P. Parithi<sup>1</sup> · P. Priyadharshini<sup>2</sup> · K. Narthini Devi<sup>1,2</sup> · S. Dinesh Kumar<sup>1,2</sup> · J. Roopavathy<sup>3</sup> · A. Begum<sup>4</sup> · P. Santhanam<sup>2</sup> · P. Perumal<sup>1</sup>

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### Abstract

Seaweeds are an important component of the marine ecosystem and that can operate as an organic biostimulant for terrestrial plants. The biochemical ingredients of seaweed liquid organic biostimulant (SLB) produced plant have been improved, and their demand has recently increased due to multiple by-products. The present study deals with the effect of seaweed liquid organic biostimulant derived from *Tarbitaria cornuta*, *Sargassum wightii* and *Halludora sparsa* at different doses like 10, 20, 30, 40, 50 and 100% on the growth and biochemical profile changes of common edible grain *Vigna radiata*. According to the findings, 20% of SLB from *H. sparsa* show the highest growth, proximate compositions, mineral contents, fatty and amino acid contents in *V. radiata*. The seed germination was obtained maximum in 20% SLB soaked seeds of *V. radiata*. The fatty acid contents were observed high in *H. sparsa* fertilizer fed *V. radiata*, palmitic acid (281.2 ± 0.04 mg/100 g) was found to be maximum in all treatment grown *V. radiata*. Saponins and terpenoids were highly present in *T. cornuta* and *S. wightii* grown VR plant. The highest plant length (31.3 cm) was observed in *T. cornuta* and lowest (17.5 cm) in *S. wightii* grown plants. Chlorophyll a and b concentration was increased significantly ( $p < 0.01$ ;  $p < 0.03$ ) in *T. cornuta* extract. The carotenoid content was increased significantly in *S. wightii* extract and decreased ( $p < 0.04$ ) in chemical fertilizer grown plant *V. radiata*. The highest antioxidant activity (6.80 ± 0.01 mg/l) was observed in HO and VR and the lowest (4.337 ± 0.03 mg/l) was recorded in TO and VR. This technique can be used in organic farming for sustainable agriculture, which is a better alternative as an environmentally friendly approach. The current study revealed that SLB had certain environmental advantages over chemical fertilizers. Seaweed liquid organic biostimulant, if used on a wider scale, might have a substantial positive environmental influence on agricultural production. Seaweed extract with superior benefits at lower concentrations should be used at very high dilution rates in the agricultural field to increase seed germination rates while without impacting the native beneficial microorganisms present in the soil.

**Keywords** Seaweed · Seaweed liquid organic biostimulant · *Vigna radiata* · Biochemical composition · Phytochemicals · Chemical fertilizer

P. Parithi and K. Narthini Devi contributed equally to this work.

✉ P. Santhanam  
santhanam.p@gmail.com

<sup>1</sup> Department of Biotechnology, J. J. College of Arts and Science (Autonomous), Palakkodu-636 616, Tamil Nadu, India

<sup>2</sup> Marine Biotechnology and Aquaculture Lab, Department of Marine Science, School of Marine Sciences, Vellore Institute of Technology, Vellore-620 024, Tamil Nadu, India

<sup>3</sup> Present Address: Applied Physiology and Biotechnology Division, Marine Algal Research Station, C-106 Central Salt & Marine Chemical Research Institute, Mundapur-625 728, Tamil Nadu, India

<sup>4</sup> PG and Research Department of Zoology, Nirmala College for Women (Autonomous), Kod Pettai, Coimbatore-641 018, Tamil Nadu, India

<sup>5</sup> Department of Botany, Viji College, Talo, Nallari-761 371, Assam, India

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