



## **Extraction of Abscisic acid, Gibberellic acid and Auxin from *Sargassum* sp. and *Gracilaria corticata* Macroalgae for Use in Algae Liquid Fertilizer in Bushehr Port**

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### **Abstract**

In the present study, to extract three regulating plant growth hormones, Abscisic acid, Gibberellic acid and Auxin from *Sargassum* sp. and *Gracilaria corticata* on the shores of Bushehr, sampling was performed from January 2015 to November 2016. Macroalgae biomass and environmental factors measured and recorded. For extraction of ABA, IAA and GA<sub>3</sub>, the algae transferred to the laboratory. After the end of the extraction process with the help of the HPLC method, these hormones were separated and identified by standard injections. The results of ABA extraction indicated that minimum of this hormone in both algae is 0% and maximum was 2.0667% in *Sargassum* sp. in September and 6.6583% for *Gracilaria*. The results of GA<sub>3</sub> extraction also showed that minimum was 0% and maximum was 5.8561% in *Sargassum* in July. In *Gracilaria* minimum obtained in November and it was 0.8907% and Maximum obtained in May and it was 8.4467%. Auxin extraction results also showed that minimum in both algae was 0% and maximum in May and equalled to 1.4113% in *Sargassum*. In *Gracilaria*, this amount was 1.851% in January. In two algae species identified, the maximum biomass related to brown



algae *Sargassum* in January ( $679\text{g/m}^2$ ) and the minimum biomass was in September ( $20.67\text{ g/m}^2$ ). Concerning red algae *Gracilaria*, the maximum biomass was in March ( $423/433\text{ g/m}^2$ ), and in November ( $158\text{g/m}^2$ ) it had the minimum biomass. The results of ANOVA and Chi-square statistical tests showed a significant difference between six months ( $P < 0.05$ ). Generally, a protocol designed to extract growth-regulating hormones. Hormones extracted in this study used in algae liquid. Due to the very high price of plant hormones and the necessity of using these hormones in algae liquid fertilizers and algae extracts, this study might be a useful source for extraction of a variety of hormones from these algae.

**Keywords:** Abscisic acid, Gibberellic acid, Auxin, *Sargassum*, *Gracilaria*