

## Chemical Composition and Characteristics of Organic Solvent Extracts from the Omani Seaweeds *Melanothamnus Somalensis* and *Gelidium Omanense*

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**Abstract :** Seaweeds are classified into three groups: red, green, and brown. Each group of seaweeds consists of several types that have differences in composition. Even at the species level, there are differences in some ingredients, although in general composition, they are the same. Environmental conditions, availability of nutrients, and maturity stage are the main reasons for composition differences. In this study, two red seaweed species, *Melanothamnus somalensis* & *Gelidium omanense*, were collected in September 2021 from Sadh (Dhofar governorate, Oman). Five organic solvents were used sequentially to achieve extraction. The solvents were applied in the following order: hexane, dichloromethane, ethyl acetate, acetone, and methanol. Preparative HPLC (PrepLC) was performed to fraction the extracts. The chemical composition was measured; also, total phenols, flavonoids, and tannins were investigated. The structure of the extracts was analyzed by Fourier-transform infrared spectroscopy (FTIR). Seaweeds demonstrated high differences in terms of chemical composition, total phenolic content (TPC), total flavonoid content (TFC), and total tannin content (TTC). *Gelidium omanense* showed high moisture content, lipid content and carbohydrates ( $9.8 \pm 0.15$  %,  $2.29 \pm 0.09$  % and  $70.15 \pm 0.42$  %, respectively) compared to *Melanothamnus somalensis* ( $6.85 \pm 0.01$  %,  $2.05 \pm 0.12$  % and  $52.7 \pm 0.36$  % respectively). However, *Melanothamnus somalensis* showed high ash content and protein ( $27.68 \pm 0.40$  % and  $52.7 \pm 0.36$  % respectively) compared to *Gelidium omanense* ( $8.07 \pm 0.39$  % and  $9.70 \pm 0.22$  % respectively). *Melanothamnus somalensis* showed higher elements and minerals content, especially sodium and potassium. This is attributed to the jelly-like structure of *Melanothamnus somalensis*, which allows storage of more solutes compared to the leafy-like structure of *Gelidium omanense*. Furthermore, *Melanothamnus somalensis* had higher TPC in all fractions except the hexane fraction than *Gelidium omanense*. Except with hexane, TFC in the other solvents' extracts was significantly different between *Gelidium omanense* and *Melanothamnus somalensis*. In all fractions, except dichloromethane and ethyl acetate fractions, there were no significant differences in TTC between *Gelidium omanense* and *Melanothamnus somalensis*. FTIR spectra showed variation between fractions, which is an indication of different functional groups.

**Keywords :** chemical composition, organic extract, Omani seaweeds, biological activity, FTIR

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