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Study of the Influence of the Region, the Depth and the Drying Process on the Chemical Composition of Gelidium sesquipedale

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Abstract : The Moroccan coasts represent an important wealth of red algae which have an economic interest. Among these algae, the Gelidium sesquipedale, which is exploited industrially for its richness in agar. The aim of this study is to establish a general overview of the macronutrient composition of Gelidium sesquipedale and to compare this composition according to three factors: the harvest site (El Jadida, Casablanca and Mohammadia), the harvest depth (coast and depth) and the drying process (open air and oven). Proteins, lipids, and carbohydrates are measured by different methods. The analysis of results show that the protein concentrations of the El Jadida and Mohammadia samples are significantly higher than that of Casablanca (0.026 ± 0.0007 µg/µg DW 0.024 ± 0.001 µg/µg DW and 0.006 ± 0.0007 µg/µg DW, $p < 0.05$ respectively). However, Casablanca samples are significantly richer in total sugars (0.023 ± 0.002 µg/µg DW, $p < 0.05$) and less rich in reducing sugars (0.0001 ± 0.00001 µg/µg DW, $p < 0.05$) compared to other samples. The lipid concentrations of the samples from the three harvest sites do not show any significant difference. With respect to depth, only total protein and total sugar concentrations were significantly higher in the coast versus depth samples (0.035 ± 0.004 µg/µg DW vs. 0.026 ± 0.0007 µg/µg DW and 0.035 ± 0.006 µg/µg DW vs. 0.012 ± 0.005 µg/µg DW $p < 0.05$ respectively). For the drying process, protein, total sugars and lipid concentrations were significantly higher in open air samples compared to oven samples (0.006 ± 0.0007 µg/µg DW). vs 0.004 ± 0.0003 µg/µg DW, 0.023 ± 0.002 µg/µg DW vs 0.007 ± 0.002 µg/µg DW and 8% vs 4% $p < 0.05$ respectively). Our results demonstrate that the chemical composition of Gelidium sesquipedale varies according to the harvest region. In addition, samples harvested on the coast and dried in the open air are the richest in macronutrients.

Keywords : biochemical composition, drying, depth, Gelidium sesquipedale, red algae, region
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