SALINE EXTRACTS FROM RED AND BROWN ALGAE WITH HEMAGGLUTINATING ACTIVITY AT DIFFERENT pH CONDITIONS

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INTRODUCTION: Seaweeds are excellent reservoirs of proteins with potent biological properties as lectins, proteins of non-immune origin containing domains that bind reversibly to specific carbohydrates or glycoconjugates. OBJECTIVE: This work aimed to obtain saline extracts from algae and to evaluate hemagglutinating activity (HA) at different pH values. MATERIALS AND METHODS: Red seaweeds (Halipton sp., Dictyurus occidentalis, Haloplegma duperreyi, Botryocladia occidentalis) and brown seaweeds (Sargassum vulgare, Dictyota cervicornis) were collected in Rio do Fogo beach (Rio Grande do Norte, Brazil), separated of epiphytes, washed with distilled water, dried (20 °C), powdered and stored (-20 °C). Extractions were performed in 0.15 M NaCl (1:20, w/v). After constant agitation (4 h, 4 °C), materials were filtered and centrifuged (8000 rpm, 20 min, 4 °C); supernatants (crude extracts, CE) were submitted to protein quantification and HA assays in 0.15 M NaCl or buffer solutions with different pH values (5.0-9.0 pH range), using glutaraldehyde-treated human erythrocytes.

RESULTS AND DISCUSSION: All CE showed protein content and HA (assays performed in 0.15 M NaCl), except CE of B. occidentalis and D. cervicornis. Best results of HA and of specific HA were showed for CE from Halipton sp. and D. occidentalis in assays using erythrocytes type O; these erythrocytes were selected to HA assays performed with buffer solutions. CE from Halipton sp. and D. occidentalis showed higher HA titers (512⁻¹ and 128⁻¹, respectively) at pH 8.5. CE from H. duperreyi, B. occidentalis and S. vulgare showed higher HA titers (64⁻¹, 32⁻¹ and 512⁻¹, respectively) at pH 7.5.

CONCLUSION: 0.15 M NaCl was effective to extract proteins from algae evaluated. HA of CE exhibited pH specificity suggesting that specific pH conditions can optimize obtaining of extracts with lectin content. Detected HA in CE reveals that species evaluated (especially Halipton sp. and D. occidentalis) are sources for lectin purification.

Keywords: Hemagglutination, lectin, seaweed.

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