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ANTIBACTERIAL ACTIVITY OF DIFFERENT WATER BASED SEAWEEDS EXTRACTS AGAINST HUMAN PATHOGENIC BACTERIA

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Nowadays, it is becoming more and more urgent to find alternatives to antibiotics since it is recognized that the increasing number of microorganisms resistant to the available antibiotics is an emergent problem throughout the world and subject of much research. Bacterial infection causes high rate of mortality in human population. New compounds with new mechanisms of antibacterial action are urgently needed. Marine macroalgae are considered an excellent source of bioactive compounds so they have been studied as potential biocidal and pharmaceutical agents, with a broad range of biological activities including antibacterial activity. The revolutionized therapy of infectious diseases by the use of antimicrobial drugs has certain limitations due to changing patterns of resistance in pathogens and side effects. However it is not only the resistance but also the cost of synthetic chemicals that impose the search for alternative drugs such as antimicrobial compounds from natural sources. These limitations demand for improved pharmacokinetic properties, which imply continued research for new antimicrobial compounds.

Aqueous extracts of *Sargassum muticum*, *Osmundea pinnatifida* and *Codium tomentosum* from the North Portuguese Coast by hot water extraction (HWE), enzyme-assisted extraction (EAE) and ultrasound-assisted extraction (UAE) were obtained and assessed for antibacterial activity by agar well diffusion method at two concentrations (2 and 8 mg/mL).

At 2mg/mL antibacterial activity was observed only against two gram positive species, namely *B. subtilis* (NCTC 3610) and two strains of *S. aureus* (ATCC 6538 and NCTC 8532). The activity index, calculated as the ratio of IZ of extract per IZ of positive control was higher than 0.50 for Viscozyme® L and cellulase EAE in *O. pinnatifida* and Flavourzyme EAE in *S. muticum* in comparison to lactic acid (30%) and chloramphenicol (1mg/mL), respectively. A four-fold increase in the concentration of lyophilized extract increased the evidence of eventual susceptibility of more pathogenic bacteria to these extracts although in some of them, their inhibition zone is minimal. The extracts showed higher antibacterial activity against Gram positive bacteria.