The potential of different extracts of cultured *HYPNEA PSEUDOMUSCIFORMIS* (Rhodophyta, Gigartinales) against Alzheimer disease and oxidative stress

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There is a continuous search on antioxidant compounds to reduce degenerative diseases and to act specifically at Alzheimer disease inactivating the acetilcholinesterase enzyme (AchE), enhancing acetylcholine concentration at synapses. Recent studies showed that extracts of some seaweeds have antioxidant activity and can be AchE inhibitors. In this sense, aqueous, methanolic and dichloromethane extracts of *Hypnea pseudomusciformis* Nauer, Cassano & M.C. Oliveira were tested for both mentioned activities. The extracts biomass came from field collection (Arraial do Cabo, RJ), from 50L and 500 L tank cultivation (abiotic conditions at both: 30 µmol $m^{-2}s^{-1}$, 25°C, nitrate:phosphate 140µM:9µM, salinity 32 and aeration), and from sea cultivation (thalli fixed in ropes, 30µmol $m^{-2}s^{-1}$, 23 °C, nitrate:phosphate 0.43µM:0.22 µM). Two techniques of antioxidant assay were used: ABTS at spectrophotometer and DPPH on thin layer chromatography (TLC). The AchE inhibition was evaluated by an autobiographic anticholinesterase assay on TLC. The aqueous extract of thalli from 50L and dichloromethane extract from 500L tank cultivation presented the highest antioxidant activity at the ABTS assay (40-50%) and its equivalence to Trolox was 180.4±16.7 and 229.5±4.4 µMol Trolox/g extract, respectively. These values are similar to antioxidants as garlic acid and ascorbic acid. The dichloromethane extracts of all samples presented activity on DPPH assay. It was compared to an equal TCL revelled with para-hydroxybenzaldehyde which indicated an antioxidant activity related to terpenes. The aqueous extracts from field-collected thalli and cultured at 50L and 500L tanks showed activity at the AchE assay. The presence of high polarity amino acids and D-galactose polysaccharide was suggested by comparing these TLC to others equally performed, and revelled with ninidrin and anisaldehyde. These data exhibited a promising research pathway for bioprospecting new compounds to avoid oxidative stress and Alzheimer.

Financial support: Post doc grant (CAPES/AUXPE-CIMAR 1991/2014 DRPF), (CAPES/AUXPE-CIMAR 1991/2014 LRC), (CNPq RC), (CNPq Pq-SR grant YYV), (CNPq 310672/2016-3 NSY).