Study of red alga *Laurencia dendroidea* as a source of new drugs

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**Introduction:** Chronic inflammation, associated with release of large amounts of chemical mediators, contributes to pathogenesis of a variety of diseases, including tuberculosis. In order to find new anti-inflammatory and anti-mycobacterial drugs, we evaluated of crude extracts from the red alga *L. dendroidea* (from of the southeastern coast of Brazil) and isolated halogenated sesquiterpenes, (-)-elatol, obtusol and cartilagineol.

**Experimental Part:** RAW 264.7 macrophages were stimulated by LPS and treated with the isolated compounds or extracts obtained by extraction with a mixture of dichloromethane:metanol (A) or dichloromethane (B) [100, 20 e 4 µg/mL] for 24h. Production of TNF-α and NO was quantified by L929 cell bioassay and Griess method, respectively. Cytotoxicity of the compounds was measured by LDH test. To study antimycobacterial activity, suspensions of *Mycobacterium bovis* BCG (1 × 10⁶ CFU/well) were incubated with each plant sample for 7 days. The growth of bacteria was quantified by MTT test, (n=3).

**Results/Discussion:** In the group A, *L. dendroidea* extract (Angra dos Reis) was the most active inhibitor of NO production (IC₅₀ 5.30±1.33) and *M. bovis* BCG (MIC₅₀ 8.66±1.36). Among the isolated compounds, obtusol (MIC₅₀ 31.44±0.76) was more active against mycobacteria and (-)-elatol was potent in inhibition of NO (IC₅₀ 16.51±1.08). The latter activity was associated with specific inhibition of iNOS expression. The extracts of *L. dendroidea* included in group B were more active, than those included in group A, in all of the studied activities. The *L. dendroidea* extract (Biscaia inlet) was the most active modulator of NO (IC₅₀ 0.03±2.33) and TNF-α production (IC₅₀ 17.84±1.90), whereas *L. dendroidea* extract (Forno beach) also inhibited the growth of mycobacteria (MIC₅₀ 10.11±1.61).

**Conclusions:** These results showed significant variability of biological activities of extracts obtained from the different populations of the same alga by extraction with two different solvents. The detected activities of *L. dendroidea* extracts and isolated substances were demonstrated for the first time.

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