Antiadhesive Activity of Polysaccharide-Rich Fractions from *Lithothamnion muelleri*

Cristiane M. Soares^a, Bruna G. Malagoli^a, Gustavo B. Menezes^b, Vanessa Pinho^b, Danielle G. Souza^c, Mauro M. Teixeira^d, and Fernão C. Braga^{a,*}

- ^a Department of Pharmaceutical Products, Faculty of Pharmacy, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil. Fax: +55 31 34096935. E-mail: fernao@netuno.lcc.ufmg.br
- ^b Department of Morphology, Institute of Biological Sciences, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil
- ^c Department of Microbiology, Institute of Biological Sciences, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil
- ^d Department of Biochemistry and Immunology, Institute of Biological Sciences, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil
- * Author for correspondence and reprint requests

Z. Naturforsch. 67c, 391-397 (2012); received August 12, 2011/April 10, 2012

Red seaweeds are known sources of polysaccharides, some of which possess antiadhesive properties by inhibition of P-selectin-mediated leukocyte rolling. We here report the chemical composition and the antiadhesive activity of polysaccharide-rich fractions from the red alga *Lithothamnion muelleri* (Hapalidiaceae). The crude fractions enriched in polysaccharides B1 and B2 were obtained, respectively, by sequential extraction with 1% and 2% (w/v) Na₂CO₃ solution, at 60 °C. Fractionation of B1 and B2 by gel permeation chromatography afforded three polysaccharide-rich fractions each, whose compositions were characterized by chemical analysis (total contents of carbohydrates, proteins, sulfate, and uronic acid); their molecular weights were estimated by high-performance gel permeation chromatography (HPGPC). The antiadhesive activity of B1-derived fractions was assayed by visualizing lipopolysaccharides-induced leukocyte rolling under intravital miscroscopy. The intravenous injection of fractions B1a and B1b in mice, at the dose of 10 mg/kg body weight, reduced leukocyte rolling by approximately 90%; fucoidan (10 mg/kg body weight) employed as positive control induced a similar response. Therefore, the sulfated polysaccharides of L. muelleri deserve further evaluation as potential templates for the development of new anti-inflammatory agents.

Key words: Lithothamnion muelleri, Sulfated Polysaccharides, Leukocyte Rolling Inhibition