

Anti-inflammatory and Analgesic Properties of a (1 \rightarrow 3),(1 \rightarrow 6)-Linked β -Glucan Isolated from *Pleurotus pulmonarius*

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A glucan was extracted with hot water from the basidiomycete *Pleurotus pulmonarius* and shown to have a (1 \rightarrow 3)-linked β -D-glucopyranosyl main-chain substituted at O-6 of every third unit by single β -D-glucopyranosyl non-reducing end units. This was shown by mono- and bidimensional nuclear magnetic resonance (NMR) spectroscopy, methylation analysis, and a controlled Smith degradation. The glucan was tested for its effects on the acetic acid-induced writhing reaction in mice. It caused a marked and dose-dependent anti-inflammatory response, demonstrated by the inhibition of leukocyte migration to injured tissues ($82 \pm 6\%$) with an ID₅₀ of 1.19 (0.74-1.92) mg/kg. Furthermore, animals previously treated with the glucan (3 mg/kg i.p.), showed a reduction of $85 \pm 5\%$ of writhes, after receiving the acetic acid injection. In the formalin test, the glucan (3-30 mg/kg, i.p.) also caused significant inhibition of both the early (neurogenic pain) and the late phases (inflammatory pain) of formalin-induced licking. However, it was more potent and effective in relation to the late phase of the formalin test, with mean ID₅₀ values for the neurogenic and the inflammatory phases of >30 and 12.9 (6.7-24.6) mg/kg and the inhibitions observed were $43 \pm 5\%$ and $96 \pm 4\%$, respectively. These data showed that the glucan had potent anti-inflammatory and analgesic (antinociceptive) activities, possibly by the inhibition of pro-inflammatory cytokines. Supported by CNPq, and Pronex-Carboidratos.

Keywords: *Pleurotus pulmonarius*; mushroom; β -glucan; antiinflammatory and analgesic effects.