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Anti-inflammatory activity of steroids from *Hypholoma lateritium*

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Hypholoma lateritium (Schaeff.) P. Kumm., brick cap by its vernacular name, is a basidiomycetes species, member of the Strophariaceae family. It is a saprobic macrofungus native to Europe, North America and the Far East, occurring usually in small tufts or occasionally singly on hardwood stumps. Previous mycochemical studies reported the presence of sesquiterpenoids, ergostane and lanostane triterpenes with cytotoxic activity.

In this study we aimed to investigate the anti-inflammatory properties of *H. lateritium* extracts, as well as to identify the characteristic secondary metabolites which may contribute to the beneficial pharmacological properties of this mushroom. In this view organic (n-hexan, chloroform and 50% methanol) and water extracts of *H. lateritium* and six fasciculol type steroids isolated from this species were subjected to 3 different *in vitro* assays focusing on COX-2 inhibition, and production of cPGES and Nrf2, respectively. Significantly decreased expression of cyclooxygenase-2 (COX-2) and increased synthesis of PGE3 and Nrf2 were observed for extracts, as well as for the steroids of this species. The results obtained demonstrate that extracts of brick cap mushroom and its isolated steroids exert not only significant inhibitory activity on COX-2, but they are also capable to stimulate the Nrf2 pathway. Our study furnishes experimental evidence that *Hypholoma lateritium* has notable anti-inflammatory properties which can be explored in future studies in the view of potential medical application.

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