

Multidirectional pharma-toxicological investigations on *Harpagophytum procumbens* DC. ex Meisn



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Biography

The pharmacological research activity of Prof. Claudio Ferrante is focused on the following main research fields: Role of endogenous peptides on food intake and energy expenditure control; Protective effects of medicinal plants and extracts, with particular regards to inflammatory and neurodegenerative diseases; Pharmacology of central monoaminergic system; Optimization of preclinical pharmacological models for the study of the mechanism of action of drugs. Prof. C. Ferrante is co-author of 82 publications in peer-reviewed international journals. Currently, Prof. Ferrante is also scientific responsible of several projects focusing on the study of the pharmacological properties of *Cannabis sativa* phytochemicals.



Inflammatory bowel diseases (IBDs) are chronic, relapsing and multifactorial disorders of the colonic mucosa, which show increased and unbalanced intestinal immune response to external stimuli. Plant-derived extracts were described to possess the capability in contrasting IBDs related oxidative stress and inflammatory pathways. In the present study, we investigated the water extract of *Harpagophytum procumbens* DC. ex Meisn. in an experimental model of IBDs. Additionally, a microbiological investigation was carried out to discriminate the efficacy against bacterial and fungal strains involved in IBD. Finally, an untargeted proteomic analysis was conducted on more than 100 colon proteins involved in tissue morphology and metabolism. The extract blunted the level of selected biomarkers of oxidative stress and inflammation, including serotonin, prostaglandins, cytokines and transcription factors. Additionally, the extract inhibited the growth of *Candida albicans* and *C. tropicalis*. The extract was also able to exert a pro-homeostatic effect on the levels of multiple colon proteins, thus corroborating protective effects against the burden of inflammation and oxidative stress. On the other hand, the supraphysiological downregulation of cytoskeletal-related proteins involved in tissue morphology and antimicrobial barrier function, namely ezrin, actin, plastein-1, smoothelin and defensins, was observed, as well. Concluding, the present multidirectional study showed protective effects of *H. procumbens* water extract in blunting the burden of oxidative stress and inflammation in LPS-stimulated colon, alongside with antimicrobial effects against pathogen fungi involved in IBD. Additionally, the fingerprint phytochemical analyses suggest the involvement of multiple active principles namely harpagoside, gallic acid, catechin, epicatechin and resveratrol in the observed pharmacological effects. Nevertheless, the supra-physiological downregulation of ezrin, actin, plastein-1.

Publications

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