

Phytochemical, Antimicrobial and Antioxidant Profile of *Solidago virga-aurea*, *Phyllanthus niruri*, *Epilobium angustifolium*, *Peumus boldus* and *Ononis spinosa* Extracts

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Abstract: Prostatitis is an inflammatory condition that is related to multiple infectious agents, including bacteria and fungi. Traditional herbal extracts proved efficacious in controlling clinical symptoms associated with prostatitis. In this context, the aim of the present study was to explore the efficacy of water extracts from *S. virga-aurea*, *O. spinosa*, *P. boldus*, *E. angustifolium* and *P. niruri* against bacterial (*Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Bacillus cereus*) and fungi strains (*Candida albicans*; *C. tropicalis*), involved in prostatitis. Additionally, antimycotic activities were tested against multiple species of dermatophytes (*Trichosporum rubrum*, *T. tonsurans*, *T. erinacei*, *Aspergillus crocatus*, *A. quadrifidum*, *A. gypseum*, *A. currey*, *A. insingulare*), as well. Antioxidant effects were also evaluated in isolated rat prostate challenged with lipopolysaccharide (LPS), whereas phytochemical analyses were conducted to identify and quantify selected phenolic compounds, in the extracts. Finally, a bioinformatic analysis was conducted to predict putative human and microbial enzymes targeted by extracts' phytochemicals and underlying the observed bio-pharmacological effects. The phytochemical analysis highlighted that rutin level could be crucial for explaining the highest antibacterial activity of *P. boldus* extract, especially against *E. coli* and *B. cereus*. On the other hand, in the *E. angustifolium* extract, catechin concentration could partially explain the highest efficacy of this extract in reducing lipid peroxidation, in isolated rat prostate stimulated with LPS. Concluding, the results of the present study showed antimicrobial and protective effects induced by water extracts of *S. virga-aurea*, *P. boldus*, *E. angustifolium*, *P. niruri* and *O. spinosa*, that are related, at least partially to phenolic composition of the phytocomplex. Additionally, the observed differences in extract efficacy supports the association of the aforementioned extracts, in order to improve the pharmacological spectrum. This could be crucial for counteracting the burden of oxidative stress and inflammation occurring in bacterial prostatitis.

Keywords: *Solidago virga-aurea*; *Phyllanthus niruri*; *Epilobium angustifolium*; *Peumus boldus*; *Ononis spinosa*; Antimicrobial; Antioxidant/Anti-inflammatory; Bioinformatics.