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Bioactivity and preliminary composition evaluation of hot water extract from *Trametes coccinea*

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Polysaccharides from medicinal mushrooms are promising bioactive compounds with potential therapeutic applications. This study characterized the chemical composition and bioactivity of hot water (HW) extract and its deproteinized (DP) fraction of *Trametes coccinea*, a species authenticated using genome sequencing. The mushroom residue remaining after sequential solvent extraction (petroleum ether, ethyl acetate, methanol, 50% methanol, and water) was further extracted with hot water and deproteinized using the Sevag method. Deproteinization enriched the polysaccharide fraction, increasing total carbohydrate content from 46.04% (HW) to 56.36% (DP) while reducing protein content from 154.58 µg/mL to 69.95 µg/mL. The HW and DP extracts exhibited antioxidant potential across multiple *in vitro* assays. The DPPH radical scavenging IC_{50} values were 853.20 µg/mL and 1397.79 µg/mL, respectively, while ABTS IC_{50} values were 296.52 µg/mL and 262.21 µg/mL. The FRAP assay indicated a concentration-dependent ferric reducing antioxidant power for both extracts. Total antioxidant capacity was recorded as 675.15 and 485.00 mg GAE/g for HW and DP extracts, respectively. The DP extract showed enhanced biological activity, with stronger inhibition of egg albumin denaturation (68.22% at 4000 µg/mL) compared to HW (33.26% at 4000 µg/mL), and higher α-amylase inhibition (53.3% vs. 43% at 8000 µg/mL). Safety evaluation using the Brine Shrimp Lethality Assay (BSLA) indicated that both extracts were non-toxic (LC_{50} > 1,000 ppm). TLC analysis of acid-hydrolyzed samples identified galactose as the primary monosaccharide, with no other sugars detected under the applied conditions. FTIR analysis confirmed the presence of polysaccharide functional groups and indicated successful removal of protein components after deproteinization while preserving the polysaccharide backbone. Overall, *T. coccinea* is a safe and potent source of galactose-rich polysaccharides with anti-inflammatory and enzyme inhibitory properties, highlighting its potential for functional food or nutraceutical applications.

Keywords:

Trametes coccinea; Polysaccharides; Deproteinization; Hot water extract