Indian Journal of Experimental Biology
Vol. 63, July 2025, pp. 589-597
DOI: 10.56042/ijeb.v63i07.17680

From nature's pharmacy: Bioactive compounds of *Pyracantha coccinea* fruits and their health effects

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Received: 06 March 2025; revised: 02 May 2025

This study aimed to investigate the biopharmacological and anticancer properties of *Pyracantha coccinea* M. Roem fruits. Fruits were extracted with ethanol and methanol using the Soxhlet extraction method. Total phenolic, flavonoid, antioxidant, and oxidant contents, as well as elemental composition, antimicrobial, and antiproliferative activities of the extracts were determined. Antioxidant capacity values were measured as DPPH 40.65%–80.61%, TAS (Total Antioxidant Status) 8.337 mmol/L, TOS (Total Oxidant Status) 12.510 µmol/L, and OSI (Oxidative Stress Index) 0.150 for the ethanol extract. For the methanol extract, DPPH was 29.38-65.29%, TAS 7.669 mmol/L, TOS 11.253 µmol/L, and OSI 0.147. Total phenolic content was 3.791 mg GAE/g in the ethanol extract and 8.684 mg GAE/g in the methanol extract. The extracts exhibited antimicrobial effects on bacteria and fungi at different concentrations, and their antiproliferative activity increased with concentration. Bioactive compounds such as fumaric acid, catechin, syringic acid, thymoquinone, phloridzin, resveratrol, quercetin, ellagic acid, naringenin, and luteolin were identified. In addition, various elements were detected at different concentrations. As a result, it was found that *P. coccinea* fruits possess a wide range of bioactive compounds and can serve as a natural source for pharmacological research. These findings indicate its potential as a therapeutic agent due to its antioxidant, antimicrobial, and antiproliferative activities. Further clinical studies are recommended to explore these properties in more detail.

Keywords: Anticancer, Antimicrobial, Antioxidant, Phenolic, *Scarlet firethorn*