Title: Multifaceted Evaluation of *Syngonium podophyllum* Flower Extracts: Anthelmintic, Antidiabetic, Antipyretic, and Antidiarrheal Potentials via Experimental, In Silico, and DFT Approaches

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Abstract: *Syngonium podophyllum* has long been used in traditional medicine to treat conditions such as diabetes, gastrointestinal issues, and fever. This study sought to scientifically evaluate the pharmacological effects of its flower-derived methanolic extract (SPF-ME) using a combination of in vivo, in vitro, and in silico methods. The anthelmintic activity of SPF-ME was evaluated using *Pheretima posthuma*, while antidiabetic potential was assessed via DNS and starch-iodine assays targeting α-amylase inhibition. Antipyretic efficacy was tested using a yeast-induced pyrexia model, and antidiarrheal effects were determined through castor oil-induced diarrhea and charcoal meal transit tests in mice. Molecular docking was conducted to analyze the interaction between major phytoconstituents and biological targets such as α-amylase, COX-2, the GABA receptor, and the M_3 muscarinic receptor. Drug-likeness and ADMET properties were also predicted. SPF-ME demonstrated significant anthelmintic activity, causing dose-dependent paralysis and death of worms, comparable to albendazole. In antidiabetic assays, it showed strong α-amylase inhibition with 83.96% ± 1.56% and 82.12% ± 1.21% inhibition in DNS and starch-iodine assays, respectively, although less potent than acarbose. The extract significantly reduced fever at 400 mg/kg, similar to paracetamol, and displayed moderate antidiarrheal effects by reducing defecation and diarrhea by 53.57% and 40.63%, respectively. Molecular docking revealed that major constituents such as Obtusifoliol and 9,19-Cyclolanost-25-ene-3,24-diol exhibited high binding affinities to key pharmacological targets. ADMET analysis indicated favorable pharmacokinetic profiles and compliance with Lipinski's rule, suggesting promising drug-like properties. Overall, the findings validate the traditional use of *S. podophyllum* flower extract and highlight its multifaceted therapeutic potential. Further research should aim to isolate and characterize its bioactive compounds and explore their mechanisms of action for pharmaceutical as well as veterinary medicine development.

Keywords: anthelmintic ,antidiabetic , antidiarrheal ,antipyretic , in silico ,Syngonium podophyllum

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