

Phytochemical Profile of Pineapple Peel (*Ananas comosus*) Extract: A Comprehensive Qualitative Analysis

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Abstract

Pineapple (*Ananas comosus*) peel, a by-product of Sri Lanka's fruit processing industry, generates significant waste, with around 50% of the fruit mass discarded during industrial processing. This study aimed to conduct a comprehensive qualitative analysis of phytochemical constituents in the peel extract of the local pineapple variety (Mauritius), commonly discarded as waste. Pineapple peels were obtained from a fruit processing company, sun-dried for two weeks, and extracted using 95% ethanol at a 1:10 peel-to-solvent ratio via maceration over 72 hours. The final extract was obtained using a rotary evaporator at 40°C, yielding 27.48%, 39.35%, and 46.36% for 25 g, 40 g, and 60 g of dried peel powder, respectively. The qualitative phytochemical screening was conducted at intervals of 1, 7, 14, and 21 days using several tests, including ferric chloride for phenols, alkaline reagent for flavonoids, Mayer's and Wagner's for alkaloids, acetic anhydride for steroids, xanthoproteic and biuret for proteins and amino acids, and tests for saponins. This comprehensive screening allowed for a detailed observation of the stability and presence of these bioactive groups across different time intervals. Results indicated a consistent presence (+) of phenols, tannins, alkaloids, saponins, proteins, and amino acids throughout the analysis period, confirming their stability in the extract. However, on day 14, the flavonoids had degraded, and the test came out negative (-), indicating that flavonoids may not be stable when stored for an extended period. Steroids were absent in all tests, confirming this compound group was not present. These findings highlight the stable profile of most bioactive compounds in pineapple peel extract while indicating specific limitations with flavonoid stability. In conclusion, this research provides foundational insights into the bioactive profile of Mauritius pineapple peel extract, supporting the valorization of food waste and the development of value-added products from this discarded resource in Sri Lanka.

Keywords: *pineapple peel, phytochemicals, waste, extraction*