

Abstract

Citrus Paradisi, the citrus fruit from the family Rutaceae cultivated all over the world in tropical and subtropical areas. Citrus is a widely consumed fruit with a lot of therapeutic effects. The major activities associated with citrus fruits are antioxidant, antidiabetic, anti-inflammatory, anticancer, and antibacterial. Citrus Albedo is the byproduct of citrus fruit which is a source of many important bioactive compounds, particularly flavonoids with major health improving impacts. The types of flavonoids present in high concentration are flavonols, flavanones, flavones, and flavanols. Naringin is the basic component of phytochemicals in citrus albedo especially in grapefruit. Among the different methods for extraction of flavonoids such as UAE, MAE, and PLE reported in the literature. Solvent extraction and maceration gave a yield of 360 mg of extract. TPC and TFC were measured to check the phytochemical profile by the use of a UV-visible spectrophotometer. Antioxidant activity was assessed by DPPH and alphaamylase inhibition assay was used to analyze antidiabetic potential. HPLC and FTIR techniques were used to characterize and isolate the naringin from citrus albedo extract. 138.10095 mg GAE/g and 52.6216 mg QE/g were the calculated values of TPC and TFC, respectively. DPPH method gave $IC_{50} = 128.297$ mg/ml for the radical scavenging activity of flavonoids in the extract. Antidiabetic potential shows IC_{50} by alpha-amylase inhibition at a value of 6.532 μ g/ml. Standard and sample with peak areas 307856 and 1101645 were determined with the help of HPLC. FTIR graph confirmed the flavonoid extraction with peak values; 3425 cm^{-1} for O-H, 1725 cm^{-1} for C=O, 2890 cm^{-1} for C-H, and 1500 cm^{-1} for C=C stretching vibrations. Solvent extraction along with maceration was an efficient and cost-effective process with a good amount of yield. Flavonoids extracted from citrus albedo can be further utilized in pharmaceuticals and industries because of their therapeutic and bioactive nature.