

Assessment of Bioactive Compounds in Seedlac Extract and Exploration of Film Forming Properties of Seedlac Resin

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Seedlac is one of the important natural, animal, and plant-based resins that have applications mainly in food, and pharmaceutical industries. This study aimed to analyse the proximate composition of raw Seedlac resin and to study the bioactive compounds (alkaloids, glycosides, saponins, phenolic compounds, anthocyanin, flavonoids, and terpenoids), antioxidant activity, total phenolic content, total flavonoid content and reducing power in Seedlac resin extracted by ultrasound-assisted extraction method. Seedlac and the gelatin-based composite film was developed and evaluated for its physical and tensile properties. Results indicated that raw Seedlac resin consisted of 0.72% ash, 4.06% protein, 2.5% fat, and 2.08% moisture. The maximum extraction yield was obtained for the sample extracted with 80% ethanol for 30 minutes. The samples extracted with 60% ethanol concentration showed the highest values for antioxidant activity (DPPH inhibition 38.54%), phenolic content (82.36 mg GAE/g of extract), flavonoid content (75.47 mg QE/g of extract) and reducing power (24.8 mg ascorbic acid equivalent/g of extract). Samples extracted with 80% ethanol gave lower values for antioxidant activity than those extracted with 60% ethanol probably due to denaturation of the extract at the higher ethanol concentration decreasing its scavenging ability. Composite film prepared with 1:1 ratio of gelatin to Seedlac showed the highest values for thickness (0.19 mm), moisture content (18.27%), water solubility (76.91%), water swelling (93.60%), tensile strength (13.72 MPa) and the highest percent elongation (29.57%). Higher gelatin content results in higher elongation because gelatin can capture water molecules increasing the polarity of the film and that water molecules could act as a plasticizer which would increase the flexibility of the film. It is concluded that Seedlac films can be improved by incorporating a suitable composition of gelatin, which would make beneficial contributions to many industries.

Keywords: Seedlac, Bioactive Compounds, Composite Film