Validated HPTLC method for simultaneous determination of alpha-mangostin and gamma-mangostin in stingless bee propolis extracts

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Abstract: Stingless bee propolis has been used as a traditional medicine for the treatment of numerous diseases. A simultaneous high-performance thin-layer chromatography (HPTLC) analysis was developed and validated for the determination of the contents of alpha-mangostin and gamma-mangostin, the major active constituents, in Lepidotrigona terminata and Lepidotrigona ventralis propolis from mangosteen orchard. HPTLC analysis was successfully conducted by using silica gel60 F₂₅₄ (20 cm x 10 cm), eluted with a solvent system consisting of toluene: ethyl acetate: formic acid (8:2:0.1, v/v/v), and detected at 254 nm. Parameters for the validation included linearity, precision, accuracy and limits of detection and quantitation. The developed HPTLC method was precise, with relative standard deviation < 2%. The recovery values of alpha-mangostin and gamma-mangostin in the extracts were 102.20 and 100.30%, respectively. The developed HPTLC method was appropriate and practical for the simultaneous analysis of these major active compounds in the stingless bee propolis extracts of L. terminata and L. ventralis. This work is valuable as guidance for the standardization of the propolis extracts and pharmaceutical products of Thai stingless bee propolis from mangosteen orchard.

Keywords: Stingless bee; Propolis; HPTLC; Mangostin; Validate