

## Poster

### Validation of liquid chromatography for the determination of an antibacterial agent, alpha-mangostin, in mangosteen peel extract: A tool for quality assessment of *Garcinia mangostana* L.

Anusak Sirikatitham<sup>a</sup>, Sukit Yodhnu<sup>a</sup>, Chatchai Wattanapiromsakul<sup>b</sup>

<sup>a</sup>Department of Pharmaceutical Chemistry, Faculty of Pharmaceutical Sciences, Prince of Songkla University, Songkhla, Thailand 90112; <sup>b</sup>Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Prince of Songkla University, Songkhla, Thailand 90112

**Introduction.** Mangosteen, *Garcinia mangostana* L., is known as the “Queen of fruits” and can be cultivated in the tropical rainforest such as Thailand. Compounds isolated from the fruit peel of mangosteen contain abundant xanthenes; especially, alpha-mangostin. It had been used as Thai traditional medicine for anti-inflammatory and antibacterial. Nowadays, it is popularly applied to cosmetic and pharmaceutical products. However, there is little information for quality and quantity determination of alpha-mangostin in mangosteen.

**Objectives.** To set up a validated reverse-phase high performance liquid chromatographic (HPLC) method for quality control and quantity determination of alpha-mangostin from mangosteen peel extract.

**Methods.** The fruit peels of mangosteen were collected from Chumporn in the Southeast of Thailand and prepared to yield mangosteen peel extract. Meanwhile, the high performance liquid chromatographic method was developed and validated to assay alpha-mangostin in plant extract using a 5 micron, C18 column (125x4 mm) and mobile phase consisting of 70% acetonitrile in 0.2% formic acid in water delivered isocratically at a flow rate of 1mL/min with UV detection at 240 nm. The validation characteristics included accuracy, precision, linearity, specificity, limit of detection and limit of quantitation.

**Results.** The assay was fully validated and shown to be linear ( $r^2 > 0.999$ ), sensitive (LOD = 0.02 mcg/mL and LOQ = 0.08 mcg/mL), accurate (recovery rates > 95.8%), precise (intra-day variation < 1.8%, inter-day variation < 4.3%) and specific. Total analysis was about 8 min with typical retention time of alpha-mangostin of about 6 min.

**Conclusion.** The method showed simplicity, good linearity, high precision and good recovery of compounds of interest. The present method should be useful for analytical research and for routine quality control analysis of alpha-mangostin in mangosteen peel extract and products of mangosteen such as antibacterial film prepared from mangosteen peel extract which is now research in our laboratory.

Keywords: alpha-mangostin, mangosteen, *Garcinia mangostana* L., Method validation, Quality control

#### Selected References

1. Suksamrarn S., Suwannapoch N., Phakhodee W., Thanuhiranlert J., Ratananukul P., Chimnoi N., and Suksamrarn A. (2003). Antimycobacterial activity of prenylated xanthenes from the fruits of *Garcinia mangostana*. Chem. Pharm. Bull. (Tokyo), 51(7):857-859.
2. International conference on harmonization of note for guidance on validation of analytical procedures: text and methodology, Step 5 of the ICH Process, 1995.

Presenting Author: Anusak Sirikatitham, [anusak.s@psu.ac.th](mailto:anusak.s@psu.ac.th), [sanusak@pharmacy.psu.ac.th](mailto:sanusak@pharmacy.psu.ac.th)