UNIVERSITI TEKNOLOGI MARA

PROBLEMS AND PROSPECTS OF TRADITIONAL COLLECTION AND PROCESSING OF MEDICINAL PLANT MATERIALS; STANDARDISATION OF MATERIAL DESIGNATED AS AJISAMAT

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CANDIDATE'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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ABSTRACT

The current practices of collection and processing of herbal materials by traditional practitioners (mostly Malays) in Perak, Malaysia, were reviewed in order to evaluate how these practices could possibly have an impact on the quality of the final products. The documentation was done through a structured interview survey conducted on 56 practitioners selected from each district of Perak. A majority of the selected practitioners were of the older generation. The method of gathering the plant materials combines collection from the wild, small scale cultivation as well as purchasing from grocery shops or other practitioners. The most commonly used plant parts are roots and leaves. The initial processing practices generally involve slicing of the raw materials into smaller pieces, drying under direct sunlight and grinding. The materials are commonly stored loosely packed, unprotected from light or pest. In total these practitioners use 184 types of plant according to their vernacular names. An analysis of the data showed that the plant known as Ajisamat corresponds to two different species from different families - *Salacia macrophylla* Blume (Celastraceae) and *Prismatomeris glabra* (Rubiaceae). Therefore pharmacognostical studies were undertaken to determine identity and quality criteria for these plants. Macromorphological inspection of the vegetative parts of the two plants reveals only a slight difference in the arrangement of the petioles. However, a microscopic investigation of the plants roots revealed distinctive anatomical features. Prismatic calcium oxalate crystals and banded paratracheal parenchyma seen in the root section were characteristics of *S. macrophylla* while *P. glabra* is characterised by an abundance of raphide crystals in the root. Other features like the differences of vessels diameters and arrangements were also of diagnostic importance for identification of the plants. Some of these characters were also identified in the powder of these plants and proposed for diagnostic purpose. The percentages of ethanol extractive values for *Salacia macrophylla* are 1.41±0.14 and 5.56±0.62 for cold and hot method, while percentages of water extractive values are 1.44±0.26 and 5.25±0.66 for cold and hot method respectively. The percentages of ethanol and water extractive values for *Prismatomeris glabra* are 1.07±0.19 and 6.20±0.53 respectively for cold and hot method. Percentages of total ash, acid-insoluble ash, water-soluble ash and sulphated ash for *Salacia macrophylla* are 1.92±0.01, 0.14±0.18, 0.77±0.22 and 14.43±8.21 while for *Prismatomeris glabra* are 3.15±1.17, 1.25±0.28, 2.57±0.85 and 47.21±17.46 respectively. Thin layer chromatography analysis for *Salacia macrophylla* developed by using a mixture of hexane and acetone as mobile phase shows three orange spots visible under ordinary light and under UV-254 nm at at R_f 0.14, R_f 0.18 and R_f 0.38 as well as three compounds visible under UV-366 nm, at R_f 0.05, R_f 0.24, R_f 0.66. In addition, a HPLC profiling method was developed for *Salacia macrophylla*. It uses a hexane extract of the plant and normal phase analysis with a mixture of hexane and ethyl acetate as mobile phase through isocratic elution (85% hexane: 15% ethyl acetate) from 0-25 min and gradient elution (85%-55% hexane: 15%-45% ethyl acetate) from 26-50 min, with injection volume of 20 microlitres and flow rate of 1 millilitre per minute. A good resolution chromatogram with single peaks at the retention time of 12, 13 and 18 min was detected by using wavelengths 273 nm and 285 nm, while longer wavelength reveal a large and poorly resolved peak at a retention time of 22 minutes. The fingerprint chromatogram together with other pharmacognostical information can be utilised as identification tools for *Salacia macrophylla* Blume and a monograph for the plant is proposed.

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