UNIVERSITI TEKNOLOGI MARA

CHROMATOGRAPHIC STUDY OF THE ETHANOL EXTRACT OF *FAGOPYRUM* SPECIES

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ABSTRACT

Fagopyrum esculentum and *Fagopyrum tartaricum* are important crops in many countries due to its multipurpose benefits in agriculture and medicinal fields. This research was carried out to review the biological properties of *Fagopyrum esculentum* and *Fagopyrum tartaricum*, to extract both of these plants using ethanol and investigate the compounds that could be detected in these plants. From the literatures, *Fagopyrum esculentum* exhibits anti-oxidant properties besides of suppressing weeds. *Fagopyrum tartaricum* exhibits more biological properties than *Fagopyrum esculentum*. *Fagopyrum tartaricum* has the properties of anti-tumor, anti-infection, anti-fatigue and anti-oxidant. The ethanol extracts of both samples were subjected to Thin Layer Chromatography (TLC) however only *Fagopyrum esculentum* extract was subjected to preparative TLC and Nuclear Magnetic Resonance (NMR) spectroscopy. The mobile phase system of hexane: ethyl acetate: acetic acid (85:10:5) showed good results for TLC for both extracts. More spots were observed in the *Fagopyrum esculentum* extract rather than *Fagopyrum tartaricum* extract using the mentioned mobile phase system. The NMR spectrum of *Fagopyrum esculentum* extract revealed fatty acids as its composition. The fatty acids that were detected were oleic and linolenic acids. This study met the objectives of this research. In conclusion, the objectives were successfully achieved by reviewing the scientific articles, utilizing chromatographic procedures and investigating the spectroscopic data.

CHAPTER 1

INTRODUCTION

1.1 *Fagopyrum* species

Buckwheat refers to any member of the *Fagopyrum* family (Polygonaceae). There are many species of buckwheat worldwide, and mainly nine species have agricultural meaning. Generally, *Fagopyrum* has two groups of species: annual (*Fagopyrum esculentum* Moench, *Fagopyrum tataricum* L. and *Fagopyrum giganteum* Krotov) and prennial species (*Fagopyrum cymosum* Meissn, *Fagopyrum suffruticosum* fr. Schmidt and *Fagopyrum ciliatum* Jaegt). Among these species, only common buckwheat (*F. esculentum*) is commonly grown while *F. tartaricum* is grown in some mountainous region (Jiang *et al.*, 2007). Common buckwheat is the most widely consumed species and has the advantages of sweet taste, large seed size, and easy dehulling seed coat. Conversely, tartary buckwheat has the disadvantages of bitter taste, small seed size, and tight seed coat that make dehulling difficult. However, common buckwheat is reported to contain less rutin in seed than tartary buckwheat (Fabjan *et al.*, 2003).

1.1.1 Consumption of Buckwheat

Buckwheat is cultivated primarily to obtain grains for human consumption. It is grown for livestock and poultry feeds. It is used as green manure for renovation of low productivity land because it grows well on such land and also a source of buckwheat honey. The hulls are often used for filling pillows and production of dye used on textile fabrics. Its perisperms can be used as fuel in producer gas plants. It is also used in