

UNIVERSITI TEKNOLOGI MARA

**THE CHROMATOGRAPHIC STUDY OF
FAGOPYRUM METHANOL EXTRACT**

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ABSTRACT

Medicinal plants have been greatly discovered by the researchers from around the world because of its contribution in treating and preventing disease in human body. Medicinal plants also can provide good health to human. Since the modern medications nowadays contain many chemicals, the medicinal plants are said to be the suitable replacement for those medication that contain chemical that will affect the body. So, the scientists are giving their full attention to do research about the plants by using various types of modern equipment in order to prove the benefits of the plants. In this study, the investigation of *Fagopyrum esculentum Moench* (common buckwheat) was restricted to the constituents that contain in the methanol extract of the seeds. All over the world, the benefits of the *Fagopyrum esculentum Moench* is said to be approved, so further study about this plant is considered to be attention grabbing. The objectives of this experiment are to investigate the traditional and medicinal values of common buckwheat and to compare the common and tartary buckwheats' contribution in preventing human disease. In addition, the objectives are to review the scientific evidence on the health effect of common buckwheat and to screen the phytochemicals in *Fagopyrum esculentum*. From the literature, common buckwheat is said as a healthful pseudocereal, has good amino acid and vitamins. It also has antioxidant activity and variety of bioactivities. In comparison, between common and tartary buckwheat, tartary buckwheat provides more medicinal benefit to human in terms of its rutin and other polyphenols content. The unsaturated fatty acids, protein content and vitamin B was higher in tartary than in common buckwheat. It can be said that tartary is an excellent food material compared with common buckwheat. In this experiment, the analytical and preparative TLC were used for the detection of compound. Furthermore, the Nuclear Magnetic Resonance spectroscopy is also used to identify the compound in common buckwheat. Finally, a fatty acid ester was identified as the derivative of the oleic acid. It can provides its own beneficial value to human health. In conclusion, this study successfully met the objectives.

CHAPTER 1: INTRODUCTION

1.1 Background

Two *Fagopyrum* (buckwheat) species are used for food in the world. *Fagopyrum esculentum* (common buckwheat) originates from Southwest China and has progressively been spread to all continents, while *Fagopyrum tataricum* (tartary buckwheat) is developed and used in the hilly regions of Southwest China (Sichuan), in northern India, Bhutan and Nepal. In Europe, tartary buckwheat is currently grown as a crop only in small part of Northwest Europe (Bonafaccia *et al.*, 2003c).

Fagopyrum esculentum (common buckwheat) has been grown for centuries in Europe and is suitable for ecological growing, without the use of artificial fertilizers or pesticides. The name “buckwheat” comes from the Anglo-saxon word *boc* (beech) and *whoet* (wheat) because the seed resembles a small beech nut which is a small sweet triangular nut of any of various beech trees. Beech trees are large deciduous trees with rounded spreading crowns, smooth grey bark, and small sweet edible triangular nuts and it is found in north temperate regions. Local people in hilly area of Uttarakhand, which is a state in the northern part of India, used it in cooking and on the occasion of festivals, and other religious rituals, dishes are prepared out of it (Ratan *et al.*, 2011). Common buckwheat is used for flour and groats products in central and Eastern Europe (Kreft, 1994). It is traditionally used for pasta products, for blended bread (in combination with wheat, corn and other cereals) mainly in and for different types of other flour foods.

Buckwheat products are known for the resistant starch and as an important source of antioxidative substances, trace elements and dietary fiber. Buckwheat proteins have a high biological value, but somewhat low true digestibility (Skrabanja *et al.*, 2000). Buckwheat protein products have been associated with preventive nutrition (Kayashita, J. *et al.*, 1999; Tomotake *et al.*, 2000; Liu *et al.*, 2001). Buckwheat has no gluten which is a protein substance that remains