



CHAPTER I

INTRODUCTION

Thailand is one of the world's biggest rice producers, with paddy output of 25 million tons in 2004. Thailand is also the world's biggest rice exporter: annual shipments are worth more than \$1,000 million and reached 10.14 million tons in 2004 and expects to ship 8.5 million tons of rice in 2005. Its main export markets are Indonesia, Nigeria, Iran, the United States of America (USA) and Singapore. At present, the well-known Thai jasmine rice has become very famous for its premium quality and aroma rice products.

Rice bran is a by-product obtained from the outer layer of the brown (husked) rice kernel during milling to produce white rice. It is rich in nutrients with 14%-16% protein, 12%-23% fat, and 8%-10% crude fiber. It is also a good source of γ -oryzanol, vitamins and contains minerals such as iron, potassium, calcium, chlorine, magnesium, and manganese. Rice bran oil is extracted from the germ and bran layers of brown rice and contains both saponifiable and unsaponifiable compounds. The saponifiable fraction consists primarily of triglycerides. Also, smaller amounts of diglycerides, monoglycerides, free fatty acids, waxes, glycolipids, and phospholipids are present. The most prevalent fatty acids are palmitic, oleic, and linoleic. Compared to other edible oils, rice bran oil has a relatively high unsaponifiable fraction of 4.2%. The unsaponifiable components include phytosterols, tocopherols, tocotrienols, and γ -oryzanol. γ -Oryzanol was originally identified as a single compound; however, it is now known that γ -oryzanol is a group of various triterpene alcohols esterified to ferulic acid. γ -Oryzanol is actually two molecules in one. The largest part is the triterpene alcohol sterol part. Sterols are the group of compounds found throughout nature, with many vital biological functions. Some well-known sterols are cholesterol and β -sitosterol. The second half of each γ -oryzanol molecule is ferulic acid, a widespread plant compound.

γ -Oryzanol has been suggested to have potential functionality such as hypocholesterolemic capability and antioxidant activity. While the international scientific research community has recognized the health promoting potential of rice bran and γ -oryzanol for many years, the researcher and rice-processing industry in Thailand have just recently begun to explore and develop its commercially feasible utilization. Most research has been done to identify components of γ -oryzanol extracted from mix rice bran. Individual constituents of γ -oryzanol in Thai jasmine rice and other local rice cultivars have not been investigated. The goal of this study was to identify individual constituents of γ -oryzanol in Thai rice cultivars. In this study, Thai jasmine rice, Pathumthani 1 and Kao Dok Mali 105, were examined for the amount of crude oil and identification of oryzanol and comparison with Sunpatong 1 (glutinous rice) and Go Ko Chai Nat 1 (ordinary white rice).