

Antimutagenicity of Black Glutinous Rice and Hom Nil Rice

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ABSTRACT

*Black glutinous rice (*Oryza sativa* var. *glutinosa*) and Hom Nil rice (*Oryza sativa*) are colored rice varieties with antioxidant properties, popular among health conscious consumers. We studied the antimutagenicity of raw, cooked and fermented samples against two direct mutagens – nitrite-treated 1-aminopyrene and nitrite treated chicken essence – in an Ames assay using *Salmonella typhimurium* strains TA 98 and TA 100. The extract of each sample with acid alcohol reduced the mutagenicity of both mutagens. In addition, the antimutagenicity of the extracts from the samples made of black glutinous rice was higher than that of the extracts from samples made of Hom Nil rice. The protective effects of these rice varieties might be due to the presence of some phytochemicals, including anthocyanins, which are the main antioxidant. The selected rice varieties might be appropriate for p*

Keywords: Ames test, antimutagenicity, black glutinous rice, Hom Nil rice, nitrite

INTRODUCTION

The colored rice varieties most consumed in Thailand are black glutinous rice (*Oryza sativa* var. *glutinosa*) and Hom Nil rice (*Oryza sativa*). Black rice is a good source of anthocyanins, namely cyanidin-3-O-glucoside and peonidin-3-O-glucoside, which are localized in the pericarp and aleurone layers of the seeds (Abdel-Aal et al., 2006; Zhang et al., 2006). Sriseadka et al. (2012) identified eleven flavonoids and their glycosides in the extracts from the bran of seven Thai black rice varieties. With potent antioxidant capacity, anthocyanins exhibit various bioactivities, including preserving vision and preventing Alzheimer's disease (Shih et al., 2010; Miyake et al., 2012). Since the incidence of cancer has increased markedly over the past 20 years and become the first cause of death among Thai (National Statistical Office, 2013), this study was aimed to investigate the antimutagenicity of black glutinous rice and Hom Nil rice against mutagenicity of nitrite-treated 1-aminopyrene and nitrite-treated chicken essence using the Ames test.