



# Gamma Oryzanol Content in Purple Rice Thailand Local Genotypes

Panita Boonsit, Dumnern Karladee and Puntipa Pongpiachan  
Faculty of Agriculture, Chiang Mai University, Thailand

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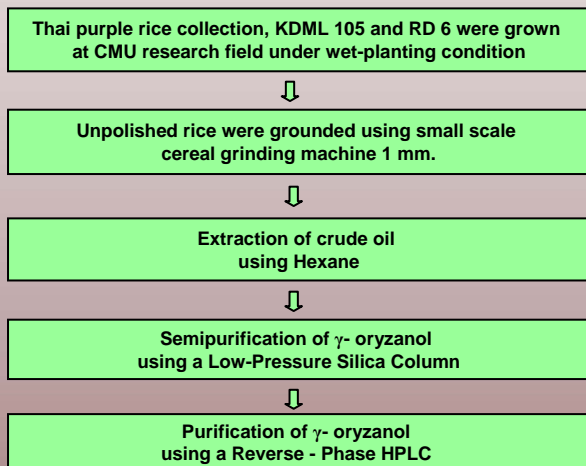
## Introduction

Purple rice (*Oryza sativa* L.) is a crop thought to have herbal properties and has been used traditionally in Thai medical treatment for centuries. The purple pigment (anthocyanin: cyanidin-3-glucoside) in the husk (hull) and pericarp is a unique characteristic.

Gamma Oryzanol from rice bran oil comprises advantageous antioxidant property (Dejian *et al.*, 2002) and solve the health problem such as: reducing plasma-cholesterol (Lichenstein *et al.*, 1994), increasing testosterone levels, and treating menopausal disorder (Nakayama *et al.*, 1987).

The objective of this research is to investigate the content of gamma oryzanol in purple rice genotypes collected over locations in Thailand.

## Material and Methods



## Result

- There was not any significant difference in crude oil content with overall mean at 2.60 g/100g grain.
- Semi purified gamma oryzanol content exhibited between 2.15 - 2.40 g/100 g grain in the highest genotypes. Kum 026 has the lowest content (1.56 g/100 g grains).
- The highest genotype of gamma oryzanol content present 72.16 and 72.95 mg/100 g grains. The white rice, KDML 105 and RD 6 were lowest content (30.89 and 30.44 mg/100 g grain, respectively).
- The correlation coefficient of crude oil to semi purified gamma oryzanol and gamma oryzanol to be non significant but had significant between semi purified gamma oryzanol and gamma oryzanol content.

Table 1 Crude oil, semi purified gamma oryzanol and gamma oryzanol content

Genotype	Crude oil (g/100 g grain)	Semi purified gamma oryzanol (g/100 g grain)	Gamma oryzanol (mg/100 g grain)
<b>Purple rice</b>			
Kumdoisaket	2.68	2.15 ab	72.95 a
Kum Col. No. 002	2.23	2.24 ab	70.16 a
Kum Col. No. 003	2.43	2.27 ab	61.50 b
Kum Col. No. 001	2.91	1.85 b	60.48 b
Kum Col. No. 027	2.47	2.40 a	57.49 bc
Kum Col. No. 029	2.85	2.08 b	54.18 c
Kum Col. No. 028	2.19	2.27 ab	49.77 c
Kum Col. No. 026	2.91	1.56 c	48.10 c
Kum Col. No. 008	3.09	1.88 b	41.31 d
KumOmkoj	2.32	2.07 b	39.83 d
<b>White rice</b>			
KDML 105	2.20	2.16 ab	30.89 e
RD 6	2.93	1.81 bc	30.44 e
<b>Mean</b>	<b>2.61</b>	<b>2.06</b>	<b>51.43</b>
LSD (0.05)	0.68 ns	0.28 *	6.09 *
SD	0.33	0.24	14.00
SE	0.33	0.14	2.94

Table 2 Correlation of Crude oil, Semi gamma oryzanol and Gamma oryzanol content

	Semi purified gamma oryzanol	Gamma oryzanol
Crude oil	0.514 ns	0.146 ns
Semi purified gamma oryzanol		0.684 *

## Discussion

- Gamma oryzanol is a major part of crude oil in unpolished rice grains.
- The amount of gamma oryzanol varied among genotypes indicated that accumulation of gamma oryzanol in rice is under genotypic determination and its genetic diversity exists in Thailand germplasm.
- An absence in the relation crude oil and gamma oryzanol means rice genotypes with equally amount of crude oil could be differ in its amount of gamma oryzanol.
- The purple rice genotype with high gamma oryzanol along with the medicinal effect of the purple pigment (cyanidin-3-glucoside) would be of advantage in medicinal property.

