

유색미의 쌀겨로부터 항보체 활성성분 분리

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Inhibitory effects of isolated compounds from black coloured rice bran on the complement classical pathway

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실험목적 (Objectives)

The complement system is important in protecting the body against infectious agents and in the pathogenesis of autoimmune diseases, such as rheumatoid arthritis and lupus erythematosus. Rice serves as the main staple for people in more than one-half of the world. Although some biological activity has been discovered from black colored rice bran (BCRB), its biological activity has not been fully characterized. The present study was undertaken to investigate the in vitro anti-complementary action of BCRB.

재료 및 방법 (Materials and Methods)

실험재료 및 성분분리

The black colored rice was purchased from Korean traditional markets in September 2008 at Jeollanamdo, South Korea. The butanol layer was concentrated under reduced pressure to give a dark purple residue. The BuOH fraction (8.2 g) was chromatographed over a silica gel column using CHCl<sub>3</sub>-MeOH (49:1→85:15) system to give 20 fractions. Fraction 13 (211mg) was rechromatographed on a Sephadex LH-20 column (5 x 100 cm) by elution with water-MeOH (98:2→85:15) system to give five fractions (Fr. 13-1-Fr. 13-5). Fraction 13-3 (63mg) was further separated by preparative high-performance liquid chromatography (HPLC) (Nomura Chemical ODS, i.d. 10 x 250mm, 25% MeCN in H<sub>2</sub>O, 1ml/min) to give Oryzafuran (5mg) and Quercetin (4mg). Fractions 17 (32mg) was separately fractionated by repeated column chromatography on Sephadex LH-20 and ODS by elution with water-0.1% trifluoroacetic acid in MeOH (1:0→0:1) system.

항보체 활성.

A hemolytic assay was used to determine the inhibition of the alternative (AP) and classical pathways(CP) of complement activation as described (Lasure et al., *Planta Medica*. **60**: 276-277, 1994).

## 실험결과 (Results)

1 was identified as oryzafuran. 2 was identified as quercetin. 3 was identified as protocatechuic acid. Anticomplement activity was summarized in Table 1. Oryzafuran exhibited significant anticomplement activity with  $IC_{50}$  values of  $126.2 \mu\text{g/ml}$ , respectively. This is the first report of the anticomplement activity of these compounds.

**Table 1.** In *vitro* anticomplement activity of isolated compounds from black color rice bran.

Compounds	$IC_{50}^{a)}$ ( $\mu\text{g/ml}$ )
Oryzafuran	$126.2 \pm 26.3$
Quercetin	$431 \pm 61.2$
Protocatechuic acid	$\geq 500.0$
Rosmarinic acid <sup>b)</sup>	$174.4 \pm 28.4$
Tiliroside <sup>b)</sup>	$98.7 \pm 16.5$

<sup>a)</sup> Results are the mean ( $n=5$ ).

<sup>b)</sup> This compound was used as a positive control.

Fig. 1. Structure of isolated compounds from black color rice bran.

