

# EXTRACTION OF RICE BRAN OIL WITH SUPERCRITICAL CARBON DIOXIDE

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Brown rice and rice bran oil (RBO) are popularly known as a nutritional rice and edible oil in East Asian countries such as Japan, china and Taiwan etc. Nowadays, RBO is getting a crucial attention in cooking market places of U.S.A., with replacing soybean oil that shares approx. 75% of all the vegetable oils consumed [1], upon a novel regulation of foods including a trans-fatty acid announced by California Health & Human Services Agency [2].

RBO is extracted from rice bran and contains rich nutrients from a brown rice, especially more tocotrienols, oryzanol, balanced fat, and a higher smoke point than other vegetable oils [3]. RBO is resulted in so much healthy, and prevents fatty acid- breakdown due to the high smoke point. These may be the reasons for RBO being attracted in U.S.A.

We evaluated the effects of extraction parameters of temperature, pressure, and extraction time. A pressure dependence of RBO solubility is shown in Fig 1. The solubility was more effective at lower temperature under cross over point ~30MPa. Analyses showed that the extracted RBO was a good balanced fatty acid, and rich oryzanol, Vitamin E, tototrienols. A notable analyzed results was the trans fatty acids was not detected. These results indicate the RBO is best trans-fatty acid replacement.

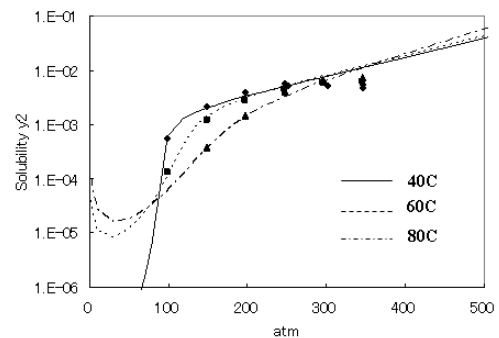


Fig.1 Pressure dependence of RBO solubility from rice bran at 40, 60, 80C,

- [1] R. H. Eckel, MD,Faha, J. Am. Heart Association. A.H.A Trans Fat Conference 2006: Report of the Trans Fat Conference Planning Group.
- [2] California Health & Human Services Agency, Sec.1. Chap.12.6 (commencing with Sec. 114377)
- [3] A.F.G.Cicero, A.Gadd, Phytotherapy Research, 15, **2001**, 277-289