

Prevention of Lipid Peroxidation, by an Enzymatic Extract from Rice Bran, in two models: Human Reconstructed Epidermis and Omega-3 Emulsion.

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Rice bran has been used as starting material by several physico-chemical processes to extract single products with a biological significance, such as protein, oil, phytochemical as γ -oryzanol, phytosterols, tocol(tocopherol+tocotrienols), ferulic acid, peptides etc., or mixtures of the above products in form of extracts which is being increasingly focused upon as an ingredient of functional foods.

Recently we have described the preparation of a soluble RB enzymatic extract (RBEE) with high functionality (1). In this work we described i) RBEE composition (bioactives compounds), ii) its high content of lipophilic components in an emulsified form, originated by the interactions of proteins and peptides, extracted during the enzymatic treatment, and iii) its functional activity on the protection against lipid peroxidation in two different experimental models.

1) Human keratinocytes exposed to Free radicals attack (UVB irradiation).

Keratinocyte monolayer and human reconstructed epidermis are incubated in culture medium in presence of different amounts of RBEE and irradiated with UVB. The antioxidant capacity of RBEE has been probed in this cell model under oxidative stress, by cell population assessment (MTT assay) and malonadialdehyde (MDA) evaluation. The results shows, that human keratinocyte monolayer are protected from irradiation preventing 33% the lipid peroxidation process (MDA generation).

2) Omega-3 fatty acids (20% EPA, 10% DHA) oxidation.

RBEE/EPA-stable emulsions has been evaluated against it susceptibility to lipid peroxidation, measuring as oxidation markers TBARS and lipid hydroperoxides. The results indicate a high stability against oxidation suggesting that this emulsion system could be used as a system to delivery omega-3 fatty acids in food applications.

1. Parrado, et al. Preparation of a rice bran enzymatic extract with potential use as functional food. *Food Chemistry* 2006, 98; 742-748.