Effects of Gamma Oryzanol on oxidative stress factors in animal model of sepsis

Elmira Zolali¹*, Hadi Hamishehkar²*, Nasrin Maleki-Dizaji¹, Hamed Hamishehkar³
*Student Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran.

1 Department of Pharmacology and Toxicology, Faculty of Pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran
2 Drug Applied Research Center, Clinical Pharmacy (Pharmacotherapy) Department, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract: There is corroborating evidence to substantiate redox imbalance and oxidative stress in sepsis that finally leads to organ damage or even death. Gamma Oryzanol (GO) is one of the major bioactive components in rice bran has been considered to function as an antioxidant.

To investigate the antioxidative effects of GO on oxidative stress factors in septic animals. To induce sepsis, cecal ligation and puncture (CLP) method was performed on the rats. A study group of forty male Wistar rats were divided into the following groups: sham group; CLP group; 50 mg/kg GO-treated CLP group and 100 mg/kg GO-treated CLP group. GO was administered with an oral gavage 2 hour prior to inducing sepsis. Blood and tissue samples were collected 12 hours after CLP to assay the oxidative stress biomarkers and prepare tissue sections for histopathological study.

Whole blood total antioxidant capacity (TAC) level increased in GO-treated CLP groups. Inflammation score of lung tissue and Myeloperoxidase (MPO) activity were significantly lower in GO treated CLP group. Glutathione peroxidase (GPx) level of lung tissue was improved by treatment with GO.

It seems that GO has a protective effect on lung inflammation and improves the body redox capacity during sepsis.

Keyword: Sepsis, Gamma Oryzanol, CLP, oxidative stress