

ANTIOXIDANT EFFECT OF MAILLARD REACTION PRODUCTS IN FOODS

S. B. Ozturk Sarıkaya, M. Hendek Ertop*

Gümüşhane University, Faculty of Engineering and Natural Sciences,
Dept of Food Engineering, Gümüşhane, Turkey

Maillard reaction and caramelisation are the main chemical reactions occurring in bakery products. They are named as non-enzymatic browning. Different compounds occurred at the end of the reaction or intermediate processing stages. These compounds contributing to specific flavor and colour characteristics are called *Maillard* Reaction Products (MRP). MRP can be both beneficial and harmful compounds. Hydroxymethylfurfural (HMF), furfural, melanoidins and acrylamide are the best known MRP. MRP are partly responsible for the taste of bread, cookies, cakes, meat, beer, chocolate, pop corn and rice. HMF is a potentially harmful intermediate product in *Maillard* reaction besides the main decomposition product of hexose under heating conditions. Different storage time, conditions, process applications, heat treatment, water activity and content of food effect on the formation of HMF besides of MRP. Many scientific studies focused on negative effects of the MRP in the past. The reducing effect of nutritional value and formation of toxic MRP were frequently expressed. In vitro studies show some of the harmful effects of MRP such as mutagenic, carcinogenic and cytotoxic. However, in addition to harmful effects of MRP, antioxidant, anti-allergic, anti-microbial properties as well as the beneficial effects have been reported in recent studies. Especially antioxidant activities of MRP are explained by radical scavenging properties of melanoidins and their reactions with oxygen. But the relationship between the formation of *Maillard* reaction products in foods and antioxidative affects is still not fully known. In this review, MRP's and their antioxidant effect in food are examined.

Keywords: *Maillard* Reaction Products, HMF, antioxidative activity

* Corresponding author: muge.ertop@gumushane.edu.tr