

ANTIOXIDANT PROPERTIES OF BIOACTIVE FOOD PACKAGING WITH NANODIAMONDS

KATARZYNA MITURA

DEPARTMENT OF BIOMEDICAL ENGINEERING,
FACULTY OF TECHNOLOGY AND EDUCATION,
KOSZALIN UNIVERSITY OF TECHNOLOGY, POLAND
*E-MAIL: MITURA.KATARZYNA@GMAIL.COM

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Introduction

The high biological activity of nanodiamond particles is based on the reactivity of diamond surface that results from its crystallographic structure and the presence of free bonds. Nowadays, materials for food packaging are a new intriguing challenge for scientists. The impact of material for food packaging in addition to the effect on the bacterial flora and the shelf life caused the search for new materials, which particularly are non-toxic and bioactive [1].

Materials and Methods

Corona treatment is a surface modification technique that uses a low temperature corona discharge plasma to impart changes in the properties of a surface. We incorporated detonation nanodiamond particles into polymer food packaging foil.

The measurements contains: the sandard packaging for butter (82 % of fat) and ND-incorporated packaging.

The p-anisidine value (AV) is a measure of the amount of lipid oxidation secondary products. In good oils and fats acceptable value is $AV < 2$. Measurements for both samples were made three times out of three individually prepared samples [2].

Results and Discussion

The study showed the antioxidant effect of the modified ND package. The p-anisidine value in the case of butter in the original packaging is twice as large as in the modified packaging LA for butter in original packaging:

$LA = 0.5667 \pm 0.022$ LA for the sample in the modified packaging $LA = 0.2735 \pm 0.018$.

Conclusions

Bioactive food packaging with incorporated nanodiamonds particles has antioxidant properties.

References

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