



8th Central European Congress on Food

Food Science for Well-being

23-26 May 2016, Kyiv, Ukraine



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ВИРОБНИКІВ ДИТЯЧОГО ХАРЧУВАННЯ,
МОЛОЧНОКОНСЕРВНОЇ ТА СОКОВОЇ ПРОДУКЦІЇ
"УКРКОНСЕРВМОЛОКО"



INTERNATIONAL
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Національна асоціація
УКРМОЛПРОМ
молочників України



Kyiv, 2016

UDC 664

8th Central European Congress on Food 2016 — Food Science for Well-being (CEFood 2016): Book of Abstracts. — 23-26 May 2016. — K.: NUFT, 2016. — 314 p.

ISBN 978-966-612-181-6

Collection of abstracts by leading scientists, specialists and young researchers in the field of food science, technology, chemistry, economics and management presented to the Congress

The congress addressed the following topics:

FOOD EXPERTISE, SAFETY AND TECHNOLOGIES

- **Food Expertise and Safety**
- **Food Technologies**

ENERGY SYSTEMS FOR FOOD CHAIN

- **Energy Efficiency**
- **Machine Building for Food Chain**
- **Intelligent Control Systems**

NATURAL BIOACTIVE COMPOUNDS, FUNCTIONAL AND NATURAL FOOD PRODUCTS, PACKING, STORING AND PROCESSING

- **Natural Bioactive Compounds, Functional and Local Food Products**
- **Packaging, Storing and Processing**
- **Food Processing**

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YOUNG FOOD SCIENTISTS — OUR HORIZON

Recommended for teaching staff, engineering and technological personnel, managers of food industry

Published in authors' edition

Recommended by the Academic Council of National University of Food Technologies

Minutes № 12, 19.04.2016

ISBN 978-966-612-181-6

UDK 664

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UKRAINE

OUTLOOK OF UTILIZATION OF PECTIN METHYL ESTERASE OF PLANT RAW MATERIALS

Pectins are the main component of cell membranes of plant raw materials. Pectines change their form being effected by pectinolytic enzymes of plant raw materials: polygalacturonase and pectin methyl esterase (PME). One of transformations of high-ester pectin (HEP) into low-ester pectin (LEP) occurs under the effect of genuine PME of plant raw materials. The enzymic system of the natural raw materials contains highly active PME. The simplest example is exfoliation of the tomato pulp due to transformation of HEP into LEP. PME was found in plantain, clover, celandine leaves, its activity has the highest importance in the period of biological ripeness of the cultures. Studies of PME activity in fruit and vegetable raw material have shown that the activity is the lowest in beet and quince, medium in potato, pumpkin, green pepper, and the highest in tomatoes and turnip. Plant esterases show the optimal activity close to the neutral and alkaline isoelectric point and are bound to the cell wall with electrostatic couplings. PME activity depends to the certain extent on presence of cations in the medium. Thus, heavy metal cations decelerate the enzymic degradation of pectin molecules. Chlorine salts Ba, Hg, Zn, Mg in concentrations 0.001 M inhibit PME activity, while bivalent cations — Cd⁺, Mn²⁺, Co²⁺, Ca²⁺ in the same concentration increase enzyme activity. Optimal pH of plant esterases is 4.5 to 8, if they effect the natural pectins of the raw material itself. Optimal temperature is about 40 °C. Technologies if structured canned products were developed which include the raw material with high PME activity as part of the recipe. The second area of our developments is isolation of PME from potato processing wastes — vegetable water and utilization in manufacture of jellified products- fruit jams, sugar free and low sugar jelly.

KEY WORDS: *high-ester pectin, low-ester pectin, plant esterases, pectin methyl esterase, canned products*