



BaSeFood
Sustainable exploitation of bioactive components
from the Black Sea Area traditional foods

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**Colour stability of enzymatically
modified pumpkin (*Cucurbita
moschata* Duch.) purees upon
heating**



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INTRODUCTION

➤ Tradition



➤ Innovation





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Materials and Methods

➤ Plant material:

Cucurbita moschata cv. Muskatna 51-17

➤ Chemical Analyses:

Total carotenoids

Total pectin

Total protein content

➤ Colour analysis

Process diagram and experimental design

Pumpkin

Peeling

Cooking

Homogenization

Enzyme Treatment

Heat Inactivation

Heat Stability Test

Total carotenoids

Colour measurements

Pumpkin

Peeling

Cooking

Homogenization

AIR
(alcohol-insoluble residue)

Enzyme Treatment

Heat Inactivation

Total protein

Total pectin



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Results and Discussion



Table 1. Contents and half-life values of total carotenoids in enzymatically modified pumpkin purees (EMPP1, EMPP2) upon heating at 85° C

Heating period (h)	Control	EMPP1	EMPP2
Total carotenoids ($\mu\text{g g}^{-1}$)			
0	24.0	28.2	27.9
1	20.4	22.5	22.6
2	16.6	20.2	21.4
4	13.8	18.4	18.6
Half-life (h)			
$T_{1/2}$ (R)	4.7 (0.98)	5.6 (0.93)	6.2 (0.95)

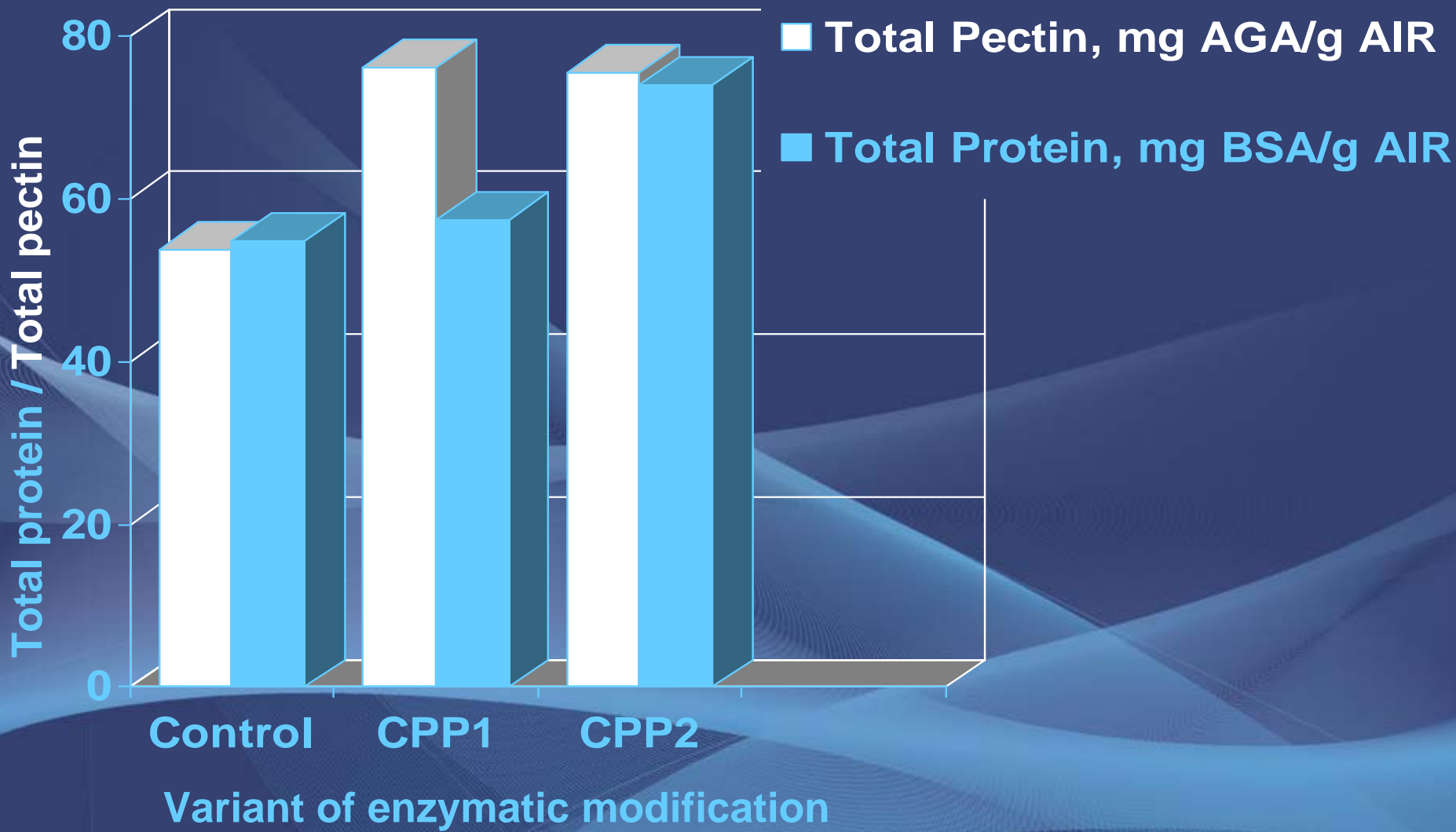
Table 2. CIELCh colour coordinates and total colour difference values of extracts from enzymatically modified pumpkin purees (EMPP1, EMPP2) upon heating at 85°C

Heating period (h)	Control	EMPP1	EMPP2
Lightness (L^*)			
0	99.2	99.1	99.2
1	99.2	99.4	99.5
2	99.2	99.4	99.5
Chroma (C^*)			
0	16.9	17.1	18.4
1	14.1	14.8	17.6
2	12.4	13.1	15.4
Hue angle (h°)			
0	100.3	100.3	100.4
1	100.8	100.3	100.1
2	100.5	100.0	100.7
Total colour difference (ΔE^*)			
1	2.8	2.3	0.9
2	4.5	4.0	3.0



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Figure 1. Release of cell wall
components of pumpkin puree
alcohol-insoluble residue (AIR)
treated by commercial pectolytic
preparations (CPP1, CPP2).





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CONCLUSIONS

Enzymatically modified pumpkin puree:

- ▶ Improved pigment retention
- ▶ Enhanced colour stability upon heating
- ▶ Supposed increase in pumpkin carotenoids bioavailability



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<http://www.basefood-fp7.eu/>



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Thank You for Your Attention!

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