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Influence of cryo-grinding on antioxidant activity and amount of free phenolic acids, rutin and tyrosol in whole grain buckwheat and pumpkin seed cake

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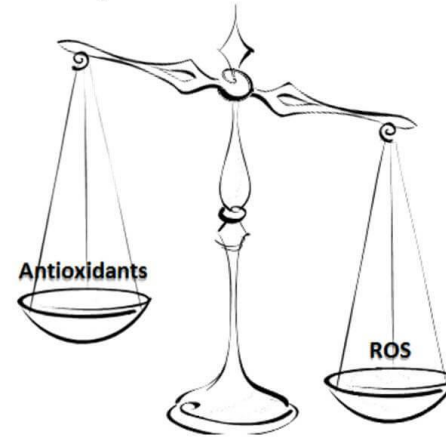
Research was funded by the Croatian Science Foundation
Project: From grain by-products to functional food through innovative processing



PROBLEM DESCRIPTION

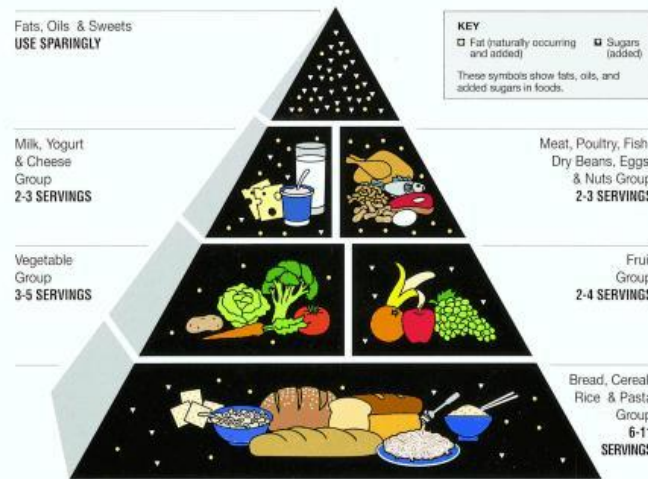
Sedentary lifestyle
Obesity and overweight
Unhealthy diet
Smoking
Psychological stress
Genetic predisposition

Oxidative Stress
Depleted Antioxidants or Excess ROS



Diabetes
Hypertension
CVD
Infertility
Inflammation

Food Guide Pyramid A Guide to Daily Food Choices



MATERIALS

BUCKWHEAT



PUMPKIN SEED CAKE FLOUR



g /100 g	Pumpkin seed cake	Buckwheat
Protein	50,9 ± 0,04	15,5 ± 0,3
Ash	9,7 ± 0,01	2,12 ± 0,02
Fat	22,1 ± 0,03	3,01 ± 0,04
- UFA	18 ± 0,02	2,38 ± 0,01
Fiber	16,6 ± 0,5	5,9 ± 0,1

METHODS

BUCKWHEAT
PUMPKIN SEED CAKE



Without
cooling

OR

With LN₂

2 min
cooling

4 min
milling



4 min
milling

2 min
cooling

HPLC-PDA method

Phenolic acids

Rutin in buckwheat

Tyrosol in pumpkin seed cake

spectrophotometric methods

DPPH

FRAP

TPC - Folin ciocalteu method

MILLING CONDITIONS:

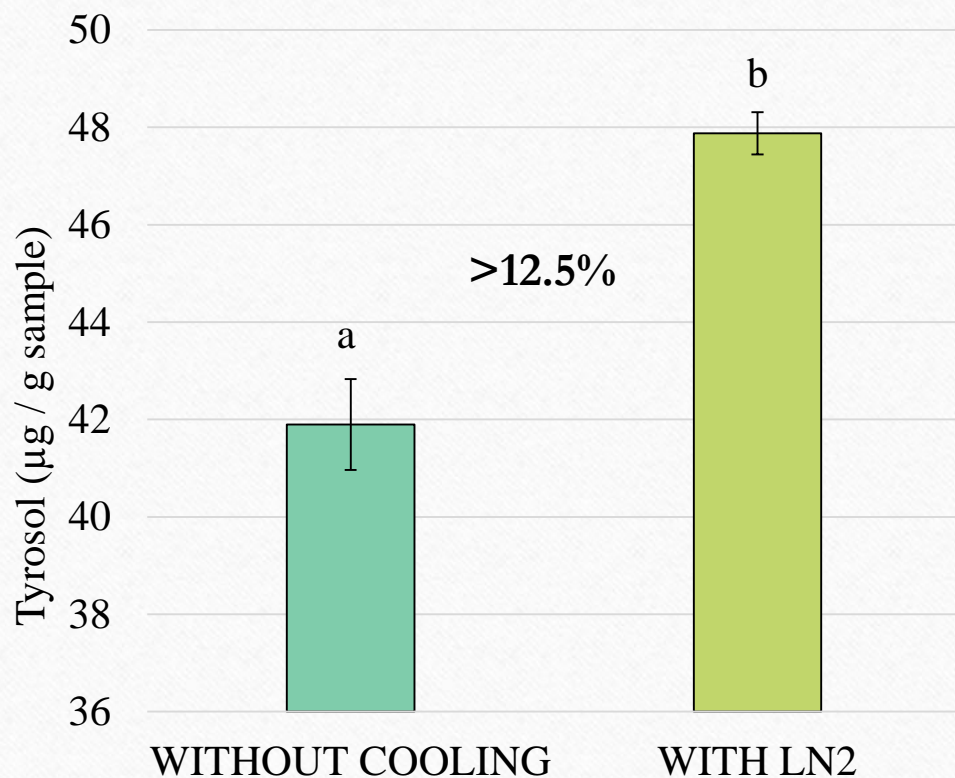
- 10 g sample
- 50 mL stainless steel jar
- Grinding ball Ø 25 mm
- Oscillatory frequency 30 Hz

RESULTS AND CONCLUSIONS

PUMPKIN SEED CAKE

- TPC (FC method) > 36,9%
- DPPH; FRAP – NS

- Tyrosol content



BUCKWHEAT

- DPPH > 23,9%
- TPC; FRAP, phenolic acids - NS

- Rutin content

