

- F.R., Harker, J.H., Maindonald, Ripening of nectarine fruit. Changes in the cell wall, vacuole, and membranes detected using electrical impedance spectroscopy. *Plant Physiol.* 106, 165-171. (1994).
- E., Vozáry, D. H., Paine, J., Kwiatkowski, and A. G., Taylor, Prediction of soybean and snap bean seed germinability by electrical impedance spectroscopy *Seed Science and Technology* 35 48-64 (2007).

EFFECT OF SOY FLOUR, CORN FLOUR AND GLUTEN ADDITION ON QUALITY CHARACTERISTICS OF BREADING

Nazlı YEYINLI*, Ergun KOSE
 Celal Bayar University, Faculty of Engineering,
 Department of Food Engineering, Manisa, TURKEY
[*nyeyinli@hotmail.com](mailto:nyeyinli@hotmail.com)

Bread crumbs are typically derived from bread which have been either dried or toasted and are often used in the food industry to enhance the fried-like texture that consumers typically enjoy. In this study, soybean flour (5,10, 15%), corn flour (5,10,15%) and gluten (3,6,9%) were added to bread formulation.

Table 1. The properties of breadings formed from different particle size

p.s.	Moisture (%)		Water Binding Cap (g/g)		Oil Uptake (%)		Compressive Force (g)	
	small	large	small	large	small	large	small	large
c	7,43	7,85	3,15	3,18	20,00	34,58	3049,3	4769,5
c5	7,83	7,31	2,87	2,71	31,01	19,67	3085,5	5211
c10	8,22	8,21	2,81	2,85	33,15	18,58	3004	4756
c15	8,04	7,83	2,64	2,64	28,79	18,51	3296,5	4543,5
s5	7,23	7,18	2,83	2,87	28,83	32,64	3243,8	3573
s10	7,24	7,7	2,82	2,69	26,66	32,6	3312	3850
s15	7,60	7,85	2,74	2,56	31,66	33,76	5140	6264,5
g3	7,14	7,16	3,17	3,08	16,23	26,09	1872,4	2979
g6	6,69	6,89	3,25	3,10	16,20	28,71	1655,1	2027,7
g9	7,29	7,42	3,45	3,13	16,15	27,51	1984,5	2198,4
LSD	0,76	0,76	0,17	0,2	9,29	9,29	373,2	373,2

Table 1 continued

Color After Frying						
	L		a		b	
p.s.	small	large	small	large	small	large
c	68,54	67,51	2,89	3,21	34,53	34,56
c5	69,11	63,11	4,61	7,41	36,62	38,22
c10	66,73	70,63	4,99	2,45	38,8	37,12
c15	71,08	66,18	2,28	4,36	35,7	37,12
s5	61,92	60,25	6,65	10,75	39,87	39,95
s10	63,00	60,01	5,43	9,20	37,91	38,16
s15	60,39	62,66	9,48	7,99	39,86	37,99
g3	61,10	60,6	6,04	5,83	35,98	35,69
g6	63,56	61,33	5,15	6,87	35,5	34,96
g9	70,94	66,51	4,38	4,53	36,95	37,67
LSD	1,69	1,69	1,26	1,26	3,08	3,08

p.s: particle size, c: control, c5: 5%corn flour, c10: 10% corn flour, c15: 15% corn flour, s5: 5% soy flour, s10: 10% soy flour, s15: 15% soy flour, g3: 3% gluten, g6: 6% gluten, g9: 9% gluten, LSD: Least Significant Difference

Effect of soybean flour, corn flour and gluten on quality characteristics of dried bread crumb were evaluated. Moisture, protein, color, water binding capacity, oil absorption, and compressive force of dried bread crumbs were determined. Addition of gluten increased water binding capacity especially for 6% and 9% levels. On the other hand, both corn and soy flour addition decreased water binding capacity in each particle size in comparison with control sample. Gluten added breading absorbed less oil than corn and soy flour added breadings. 15% soy flour addition considerably increased compressive force while gluten addition reasonably decreased the compressive force as compared with control sample ($p < 0.0001$).

**PRELIMINARY RESULTS FOR CONTENT
OF NATURAL AND ARTIFICIAL RADIONUCLIDES
IN SOME MARINE OBJECTS FROM BLACK SEA COAST**

I.YORDANOVA, D.STANEVA, TS. BINEVA, E. PETROVA-PAVLOVA *

Institute of Soil Science "N. Poushkarov",

Laboratory of Radioecology and Radioisotopic Research,
7, Shousse Bankya Str, 1080 Sofia, Bulgaria

*Institute of Fishing Resources, 9000 Varna, 4 Primorski, Blvd.

E-mail: ivanka.yordanova@gmail.bg