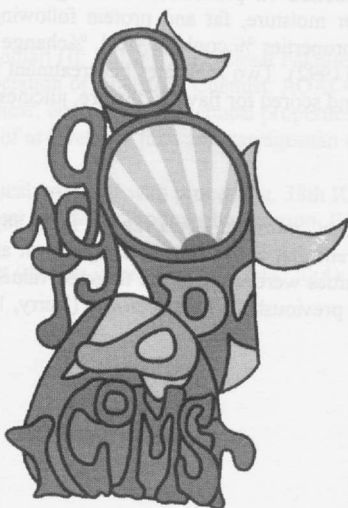


## PS 3

### Poster session and workshop 3

# Meat technology and processing



Monday, August 31<sup>st</sup>  
17:15h-18:45h

## THE EFFECTS OF ADDED CORN FLOUR ON THE QUALITY OF LOW FAT BEEF PATTIES

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## BACKGROUND

Increased consumer emphasis on reducing dietary cholesterol and fat intake, has increased interest in producing low fat meat products. However, fat exerts considerable influence on binding properties of meat products and in finely comminuted products such as frankfurters. Reducing the fat content in meat products therefore presents a number of difficulties in terms of flavour and texture (Berry, 1992).

Different techniques have been practiced to increase the stability and quality of low fat meat products. Non-meat ingredients, such as soybean products, starch, oat flour and fibre, and malto dextrins have been added to meat products to offset the detrimental effects of reducing the fat level (Keeton, 1992; Serdaroglu and Tömek, 1995)

## OBJECTIVES

The objective of this research was to evaluate the effects of added corn flour (0, 2, 4) on the quality parameters of beef patties at different levels of fat (5, 10, 20).

## METHODS

Beef and beef fat was used for producing patties. Excess fat was trimmed from the beef, than meat and fat minced through a 3 mm plate. The meats were weighed according to the formulation (Table 1). Target fat levels were 5, 10 and 20% fat. Three different (0, 2, 4%) corn flour levels were used at each fat level and different patty formulations were obtained. The patties were than vacuum packed separately and frozen at -19°C. Two replications of the experiment were conducted each at separate times.

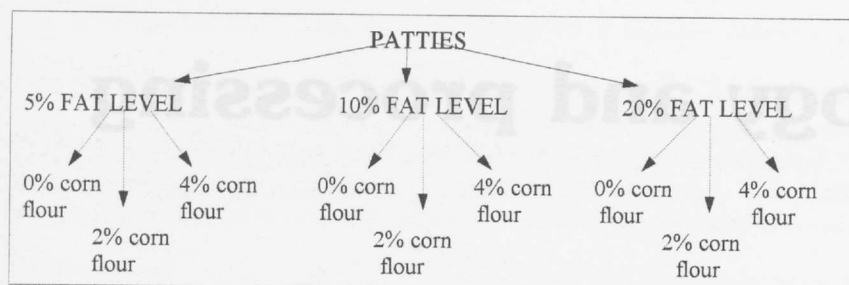


Table 1. Formulation for patties with varying fat and corn flour levels.

Patties were thawed for 12 hours at 4°C and cooked on preheated electric griddle 8 minutes at each side for analyses and sensory evaluations. Raw and cooked patties were evaluated for moisture, fat and protein following AOAC (1990) procedures. pH was determined according to Landvogt (1991). To evaluate the cooking properties % cooking yield, %change in patty thickness and % change in patty diameter and % fat retention were determined according to Berry (1992). Two replicates per treatment were analyzed. A trained six member sensory panel was used to characterize palatability of cooked patties, and scored for flavour, texture, juiciness, overall acceptance and overall quality. Data were analyzed using analysis of variance (Açıkgöz, 1993).

## RESULTS

Proximate analysis of the raw patties indicated that, moisture levels ranged from 58.06% to 64.18% (Table 2). Fat levels affected the moisture content of the raw patties ( $p < 0.05$ ). It is apparent that corn flour have significant affect of the protein content of the samples. Protein levels ranged from 17.06 to 19.85%. Fat levels in the patties were close to the targeted values of 5, 10, 20% fat (Table 2). pH values of the raw patties were found similar. These results have been noted previously by other workers (Berry, 1992; Hughes et al, 1997).



Sample codes	Moisture (%)		Protein (%)		Fat (%)		pH	
	Raw	Cooked	Raw	Cooked	Raw	Cooked	Raw	Cooked
5/0	63.88	58.38	19.85	25.02	6.97	12.13	6.47	6.70
5/2	64.18	58.52	19.03	24.80	8.85	10.00	6.31	6.61
5/4	63.01	57.55	18.85	24.20	9.10	10.44	6.31	6.57
10/0	61.45	56.75	19.04	24.81	14.56	11.62	6.52	6.60
10/2	62.86	57.23	17.06	23.85	15.00	11.27	6.29	6.44
10/4	61.26	55.92	17.91	24.00	14.58	9.47	6.47	6.65
20/0	63.79	59.89	17.90	24.00	15.29	11.22	6.32	6.16
20/2	59.04	55.82	18.11	24.12	16.47	10.85	6.27	6.25
20/4	58.06	54.35	17.29	23.90	17.37	11.21	6.28	6.44

Table 2. Proximate analysis of raw and cooked beef patties

The results of the proximate analysis of cooked patties were given in table (2). Moisture losses decrease by the increasing amount of fat and corn flour ( $p<0.05$ ). It is apparent that cooking had significant affect on the protein and fat contents of the patties. No differences were found between the pH values of the samples ( $p<0.05$ ). Cooking properties of patties were shown in table (3). % cooking yields were lower in which were patties formulated with corn flour ( $p<0.05$ ). Patty thickness were found similar among the samples. Increasing level of fat resulted higher % fat retention values (Table 3).

Scores for flavour and overall appearance followed a similar pattern ( $p<0.05$ ), patties containing 5% fat-0%, 2% corn flour and 20% fat-2%, 4% corn flour were found more juicy ( $p<0.05$ ). Huffman and Egbert (1990), reported improvements in juiciness with increases in fat from 5 to 20%. On the other hand patty formulated with 5% fat and 4% corn flour were given the higher texture scores.

Sample codes	Cooking yield (%)	Change in patty diameter (%)	Change in patty thickness (%)	Fat retention (%)
5/0	74.58	23.48	55.78	81.95
5/2	80.41	19.27	25.56	74.55
5/4	84.56	15.63	62.72	82.89
10/0	76.08	21.33	38.72	60.78
10/2	80.16	17.84	31.63	59.95
10/4	84.83	16.49	51.02	54.94
20/0	70.94	23.89	17.18	51.54
20/2	72.47	21.80	46.33	47.33
20/4	77.52	17.77	25.55	49.71

Table 3. Cooking properties of beef patties.

## CONCLUSION

Added corn flour have potential for improving palability of low fat beef patties. Corn flour also reduced cooking losses and did not affect patty thickness and reduced percentage decrease in patty diameter.

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