1980

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DEPT. OF ANIMAL SCIENCE REPORT
POULTRY 80-6

Introduction

South Dakota produces more domestic geese than any other state in the United States. Marketing of geese is decreasing due to importation of Canadian geese and a decreasing consumer demand. Research is needed to increase goose meat consumption. A large percentage of turkey meat is sold as retail convenience products such as rolls, yet there are virtually no comparable products on the market from goose meat. This study was undertaken to develop and evaluate an acceptable goose roll.

Methods

Domestic geese were hand-boned and divided into three formulations which included (1) 100% chunks, (2) 75% chunks, 25% emulsion and (3) 50% chunks, 50% emulsion, and subsequently made into goose rolls. This study was initiated to evaluate texture differences as affected by chunk size.

In another project, goose rolls were made to contain varying combinations of nitrite (NO_2) and commercial smoke (No NO_2 + No Smoke; No NO_2 + Smoke; NO_2 + No Smoke; NO_2 + Smoke).

All goose rolls were formulated to contain salt, pepper and sodium tripolyphosphate. Each formulation was mixed for 10 minutes, stuffed into casings and cooked in a steam-jacketed kettle to produce a goose roll. A large consumer panel (N = 50) was given a sample of each treatment and asked to rate them for texture desirability, flavor desirability and overall desirability on 8-point scales (8 = like extremely; 1 = dislike extremely). In addition, juiciness was rated on an 8-point scale (8 = extremely juicy; 1 = extremely dry).

Results

Mean values for sensory attributes of goose rolls by ingredient formulation are presented in Table 1. No significant differences were observed in texture desirability or juiciness as affected by the presence or absence of smoke and/or nitrite. Flavor desirability ratings ranked highest for samples containing nitrite. Goose rolls made to contain nitrite with no smoke were rated more desirable than rolls made to contain no nitrite with smoke. These data tend to suggest that consumers prefer nitrite-containing products. However, this preference may be regional in that people who normally eat a substantial amount of goose will normally prefer goose rolls without nitrite.

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Mean values for sensory attributes of goose rolls by chunk size are shown in Table 2. The chunk size did not significantly affect texture or overall desirability as originally believed. It is therefore suggested that goose rolls be made from 100% chunks.

Based on the results of this study, the following conclusions can be made:

(1) Goose rolls can be manufactured to contain nitrite and/or smoke. However, the use of these substances would depend on the consumer preference of that region.

(2) Chunks rarely affected texture ratings and therefore goose rolls could be made from any combination of meat chunks and emulsion (50:50) to all chunks.

Table 1. Mean values for sensory attributes of goose rolls by ingredient formulation

Ingredient formulation	Sensory attributes[a]			
	Texture desirability[b]	Flavor desirability[b]	Juiciness[c]	Overall desirability[b]
No NO_2; no smoke	5.7[d]	5.3[e]	5.0[d]	5.4[de]
No NO_2; smoke	5.5[d]	5.3[e]	4.8[d]	5.3[e]
NO_2; no smoke	5.9[d]	5.9[d]	5.0[d]	5.8[d]
NO_2; smoke	5.9[d]	5.9[d]	4.8[d]	5.4[de]

[a] Means in the same column followed by a common letter are not different ($P>0.05$).
[b] Means based on an 8-point scale (8 = like extremely; 1 = dislike extremely).
[c] Means based on an 8-point scale (8 = extremely juicy; 1 = extremely dry).

Table 2. Mean values for sensory attributes of goose rolls by chunk size

Particle size	Sensory attributes[a]			
	Texture desirability[b]	Flavor desirability[b]	Juiciness[c]	Overall desirability[b]
100% chunk	5.8[d]	5.8[d]	4.9[de]	5.6[d]
75% chunk + 25% emulsion	5.6[d]	5.4[e]	4.6[e]	5.4[d]
50% chunk + 50% emulsion	6.0[d]	5.6[de]	5.0[d]	5.5[d]

[a] Means in the same column followed by a common letter are not different ($P>0.05$).
[b] Means based on an 8-point scale (8 = like extremely; 1 = dislike extremely).
[c] Means based on an 8-point scale (8 = extremely juicy; 1 = extremely dry).