



## Preparation Cost of Patties from Spent Hen Meat

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### ABSTRACT

Chicken patties from spent hen meat were prepared from a standardized formulation and were extended with optimized level of non meat extenders viz sorghum flour, barley flour and pressed rice flour at 5%, 10% and 5% respectively. Optimization of levels for extenders was done under different experiments based on sensory attributes and those having sensory status closer to control were selected. The cost of patties from spent hen meat after replacement of lean with selected level of non meat extenders were compared among themselves to determine the most economic preparation. It was found that extended patties were cheaper than control patties and among the extended patties least cost was for barley flour extended patties. The cost for sorghum flour extended patties and pressed rice flour extended patties were almost same but these were higher than barley flour extended patties because of higher yield and high level of replacement of lean meat in latter case. Thus it was concluded that formulation with extension of 10% barley flour at the cost of lean meat was most economic among the tested non meat extenders.

**Keywords:** Chicken Patties, Economics, Spent hen, Processing, Meat and Poultry.

The increased concern for nutritional security of common mass demands a holistic approach to stretch the availability of quality protein sources by reducing the cost of formulated products. The ICMR recommendation for protein consumption of 1g/Kg body wt/day with Net Protein Utilization (NPU) of 65 could be achieved only by introducing the animal proteins in regular diet. Poultry industry, a vibrant, organized and scientific sector now days in India, can play a key role in ensuring quality animal proteins at cheaper rate particularly through spent hen meat (FAO, 2006). Processing of meat from spent hen to different value added products open the avenues for not only its judicious utilization but a readily accessible animal protein sources for poor. Emphasis over food processing and economic formulation has made it necessary to do the needful work in this direction. Reduction of cost by replacement of costly meat with economic non-meaty substances (Huang *et al.*, 2005; Yilmaz and Daglioglu, 2003) has been in practice since long back,



but reporting about the actual figure is still inconclusive. Thus, the present study envisaged to study the actual economization of preparation cost of patties from spent hen meat after replacement with selected extenders at optimum level.

## MATERIALS AND METHODS

Patties from spent hen meat were prepared following a pre standardized formulation (Nag *et al.*, 1998) and optimized processing conditions. Len meat from spent hens was cut into small chunks and minced in mincer (Electrolux model 9152) with 6 mm plate followed by 4 mm plate. Vegetable oil, refined wheat flour, common salt, sodium nitrite, dry spice mix and condiment mix were added to weighed meat. To determine the most economic preparation out of tested non meat extenders viz sorghum flour, barley flour and pressed rice flour, four sets of emulsions including control were prepared by replacing lean meat with pre-optimized levels of extenders. The level of extenders was optimized under different experiments based on physico-chemical and sensory attributes. For optimization of level of either of the extender, replacement of lean meat in control formulation was made at the levels of 5, 10 and 15% (1:1 hydration). Based on physico-chemical attributes, dimensional parameters and sensory characteristics the optimum level of replacement was adjudged as 5%, 10% and 5% for the sorghum flour, barley flour and pressed rice flour extenders respectively (Kumar and Sharma 2005a; 2005b and 2006). The preparation cost of extended meat patties with similar sensory scores were calculated considering the ingredients and processing conditions utilized in their preparation to finally determine the most economic extended spent hen meat patties formulation.

## RESULTS AND DISCUSSION

The comparative cost for formulation of 50 Kg ground chicken patties emulsion is presented in Table-1 and overhead cost involved in product preparation in Table-2. The formulation costs of patties prepared by incorporation extenders were comparatively lower because of replacement of the costlier lean in formulation. It was lowest for the patties prepared by use of 10% barley flour because of higher level of substitution of lean meat. Similar overhead cost for emulsion preparation was reported by Kumar (2004). In Table 3 production cost of chicken patties in actual considering the yield has been presented. The cooking yield of the chicken patties extended 5% sorghum flour, 10% barley flour and 5% pressed rice flour were 85.25, 88.60 and 85.38 percent, higher than the figure of 83.46% cooking yield for control patties (Kumar and Sharma 2005a; 2005b and 2006). Thus, the studies indicated that incorporation of extenders in chicken patties at their optimum level viz: sorghum flour (5%), barley flour (10%) and pressed rice flour (5%) resulted in cost reduction of chicken patties by 10, 19 and 10 rupees per kg

**Table1:** Comparative formulation cost of 50 kg ground chicken patties.

Ingredients	Rate ₹/Kg	Control		Extension with 5%_ Sorghum flour		Extension with 10% Barley flour		Extension with 5% Pressed rice flour	
		Quantity Cost (Kg) (₹)	Quantity Cost (Kg) (₹)	Quantity Cost (Kg) (₹)	Quantity Cost (Kg) (₹)	Quantity Cost (Kg) (₹)	Quantity Cost (Kg) (₹)	Quantity Cost (Kg) (₹)	Quantity Cost (Kg) (₹)
Lean meat (Deboned)	125.00	33.50	4187.50	31.00	3875.00	28.50	3625.00	31.00	3875.00
Refined veg. oil	75.00	04.50	337.50	04.50	337.50	04.50	337.50	04.50	337.50
Sorghum flour	10.00	--	--	01.25	12.50	--	--	--	--
Barley flour	10.00	--	--	--	--	--	--	01.25	18.75
Pressed rice flour	15.00	--	--	--	--	02.50	25.50	--	--
Ice water	00.50	06.00	03.00	07.25	03.62	08.50	04.25	07.25	03.62
Refined wheat flour	10.00	02.00	20.00	02.00	20.00	02.00	20.00	02.00	20.00
Table salt	8.00	01.00	08.00	01.00	08.00	01.00	08.00	01.00	08.00
Spice mix.	130.00	00.875	113.75	00.875	113.75	00.875	113.75	00.875	113.75
Condiment mix.	25.00	02.125	53.12	02.125	53.12	02.125	53.12	02.125	53.12
Total Formulation cost		4722.87		4423.50		4186.62		4429.75	

Cost of Raw materials (Approx.)

**Meat:** Cost of spent hen meat = ₹ 50.00/Kg, Cost of deboned meat (40% dressed weight) = ₹ 125.00/Kg**Extenders:** Sorghum flour = ₹ 10.00/Kg, Barley flour = ₹ 10.00/Kg, Pressed rice flour = ₹ 15.00/Kg**Spice mixture** = ₹ 130.00/Kg**Condiment mixture** = ₹ 25.00/Kg



respectively as compared to control product. The barley flour incorporated product was 15.70% cheaper whereas, sorghum and pressed rice flour based chicken patties were also 8.26% cheaper than control. Thus by use of extenders at their optimum levels, the cost of chicken patties was further economized without much compromise the sensory quality attributes.

**Table-2.** Overhead Production Cost of Approximately 50 Kg Chicken Patties Emulsion

**1. Labour charges**

Skilled worker (one)	= 80.00/day/head	= ₹ 80
Unskilled worker (two)	= 50.00/day/head	= ₹ 100
		= ₹ 180/day
<b>2. Electric charges*</b>		= ₹ 52.00

(16 unit × 3.25 price)

**3. Equipment depreciation\***

@ 10% per annum	= ₹ 13250.00
Percent level day basis (Working days 300)	= 44.16 ≈ ₹ 44

**4. Cost of Packaging material**

(8" × 6" LDPE pouches)	= 200 × 0.20 = 40.00
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**5. Water charges (200 litre)**

= 200 × 0.04 = 08.00

**TOTAL OVERHEAD COST** ≈ ₹ 325

**Table 3:** Production Cost Of Chicken Patties

Total cost of production of chicken patties obtained from 50 Kg emulsion. = [Formulation cost + Overhead Production cost]

Total cost of production of chicken patties obtained from 50 Kg emulsion.

- (1) Control recipe = [ 4723.00 + 325] = ₹ 5048/-
- (2) Recipe with 5% Sorghum flour extension = [ 4424.00 + 325] = ₹ 4749/-
- (3) Recipe with 10% Barley flour extension = [ 4723.00 + 325] = ₹ 4512/-
- (4) Recipe with 5% Pressed rice flour extension = [ 4723.00 + 325] = ₹ 4755/-

Yield of chicken patties obtained from 50 Kg emulsion.

- (1) Control recipe = 41.73 Kg [ yield ≈ 83.46 ]
- (2) Recipe with 5% Sorghum flour extension = 42.76 Kg [ yield ≈ 85.52 ]
- (3) Recipe with 10% Barley flour extension = 44.30 Kg [ yield ≈ 88.60 ]
- (4) Recipe with 5% Pressed rice flour extension = 42.69 Kg [ yield ≈ 85.38 ]

Production cost of 1 Kg chicken patties

(1) Control recipe	= 120.96	$\cong ₹ 121/\text{Kg}$
(2) Recipe with 5% Sorghum flour extension	= 111.06	$\cong ₹ 111/\text{Kg}$
(3) Recipe with 10% Barley flour extension	= 101.85	$\cong ₹ 102/\text{Kg}$
(4) Recipe with 5% Pressed rice flour extension	= 111.38	$\cong ₹ 111/\text{Kg}$

## CONCLUSION

The price of patties can be lowered with optimum replacement of lean meat by suitable non-meat extenders without a significant compromise with quality. In the study it was also observed that patties with barley flour extension were cheapest because of higher level of replacement and yield.

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