A Traditional Recipe of Mandi District of Himachal Pradesh- *Sagot*

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Abstract—*The present study was undertaken with the objectives to document knowledge about the process/preparation of traditional food i.e. Sagot of Mandi District, Himachal Pradesh during various fast/festivals or other special occasions/rituals and to evaluate the selected foods recipes in relation to nutritional quality and consumer acceptability. Mandi district being a land of rich heritage of tradition and culture endows in numerous traditional foods of diverse sensory qualities. Five blocks viz. Mandi-sadar, Karsog, Sundernagar, Chauntra and Seraj were selected. Participatory Rural Appraisal techniques were used to document information on popular traditional foods (Sagot). The selected traditional food samples were analysed for their physico-chemical and nutritional composition as well as for their consumer acceptability. There was not much difference in the processing methodology of traditional recipes documented from the selected blocks of the district. Nutritional comparison of the samples revealed that Highest value for moisture was observed in B_4 (5.60%) followed by B_2 (5.00), B_3 (4.70), B_5 (4.36) and B_1 (4.00%). Statistical analysis showed that all the treatments varied significantly with each other. Crude fat and ash was found maximum in B_1 sagot and crude fiber and total carbohydrates in B_5. Highest pH was found in B_3 (6.98) followed by B_1 (0.18), B_2 (0.17), B_3 (0.17) and B_4 (0.16). All the values varied significantly, except B_5 and B_1. Crude fat and ash was found maximum in B_1 sagot and crude fiber and total carbohydrates in B_5. Organoleptic evaluation of prepared products showed that their sensory scores were in the acceptable range and majority of remarked as 'liked very much' by the evaluators. "liked moderately" to "liked very much" on a nine-point hedonic scale. The products were found to be economically viable as a traditional food culture*

Keywords: *Traditional food, Sagot, Consumer acceptability.*

1. INTRODUCTION

Nestled amidst the Western Himalayas, the state of Himachal Pradesh is often referred as *'Devbhoomi'* meaning land of Gods. One of the representative districts to this reference is Mandi, where one can find various temples, some of which belongs to era of Mahabharata. District Mandi has a rich culinary heritage. A large number of traditional foods are prepared in rural and tribal areas of Himachal Pradesh. These traditional products are unique to Himachal and some of the traditional foods still form a staple diet of sizeable population of the state. The variable traditional foods rely heavily on local ingredients. Special food preparations have been developed for ceremonial occasions that have socio-cultural importance [8].

The people of Himachal Pradesh have developed traditional food processing technologies for preparing the foods from locally available substrates largely governed by the ethnic preference, agroclimatic conditions, sociocultural ethos and religion. However, there may be local variation from region to region. A number of traditional foods are prepared and consumed by people in Himachal Pradesh for centuries, and these form a part of sociocultural life of the hill people [9-10].

The production of some traditional foods is limited to household level, while some food delicacies like *kachori, ghayor, sagot, badana, sepu bari etc.* are being prepared and sold in the market. Many rural ladies, self-help groups as well as small scale cottage industries prepare sagot and sell sagot, *moong bari, urad bari, seera etc.* According to an estimate the consumption of traditional foods in India is 30 times more than the quantity of processed western style foods like bread, biscuits, jam, ice cream, soft chocolates, and several other junk foods [7].

There is a large array of traditional foods prepared in different regions of Mandi district, which constitute diverse ingredients and processing techniques leading to variation from region to region. So, there is a need to document the knowledge/methods used for their preparation and to assess the cultural/social relevance. With this backdrop, the present study was planned and conducted with following objectives,

- To document traditional food sagot and their methods of preparation of Mandi district.

- To evaluate the selected food (sagot) recipe of Mandi district in relation to nutritional quality and consumer acceptability.

2. MATERIAL AND METHOD

The present study was conducted in Five blocks viz. Mandi-sadar, Karsog, Sundernagar, Chauntra and Seraj (Designated

as: B = Block, B_1 = Karsog B_2 = Mandi-sadar B_3 = Sundernagar, B_4 = Chauntra, B_5 = Seraj). A sample size of about 75 families (15 from each block) was taken randomly and surveyed for documentation of popular traditional foods. In Fig. 1. Map showing blocks of district Mandi, Himachal Pradesh. Participatory Rural Appraisal techniques were used to document information which consisted of discussion with key informants and focused group discussions with the groups chosen randomly from different communities of the studied areas.

"Documentation and compilation of data"

A questionnaire was prepared to collect the relevant information, keeping in view the objectives of the study. A total of about 75 families (15 from each block) were surveyed for documentation of popular traditional foods. Participatory Rural Appraisal techniques were used to document information which consisted of discussion with key informants and focused group discussions with the groups chosen randomly from different communities of the studied areas.

The respondents were questioned about traditional foods and their associated socio-cultural or religious importance. From the pooled information from all the selected blocks, *Sagot* recipe common to all selected areas were finalized. The raw materials/ingredients used in this recipe, stepwise processing methodology and special technique(s) peculiar to the region were noted down with care.

"Collection/ preparation of selected recipes" The non-perishable recipes were prepared under the supervision of knowledgeable respondents, who were master in preparation of particular traditional recipes. The prepared products were then collected, partially dried in sun and brought to the laboratory for the analysis. The perishable recipes pertaining to particular area were prepared in the laboratory as per method documented from that area.

"Sensory acceptability of the products [5]" The standardized products were presented to a panel of judges for sensory evaluation for colour, flavour, texture and overall acceptability ratings of the product on a 9-point hedonic scale.

"Physico- chemical analysis" The prepared food samples were then analyzed for pH [2], bulk density [4] and titrable acidity [6]. The parameters like pH and titrable acidity are related to the shelf life of the products, and can be helpful in assessing the time upto which it can be stored without any special efforts. Bulk density on the other hand, is required for the total comprising particle volume, inter-particle void volume and internal pore volume U. Ruth Charrondiere [3]. The proximate constituents' viz. moisture, crude fat, /ash, crude fibre and crude protein were determined using standard methods of AOAC [2]. The digested samples were analyzed for the determination of calcium, and Iron. Calcium was determined with flame photometer and iron was determined

by atomic absorption Absorption spectrophotometer [6]. Reducing and non reducing sugars were calculated by [1].

"Statistical analysis and expression of results" The data obtained were subjected to statistical analysis using completely randomized design and software- CPCS-1. Data was compared at 5% level of significance. The data pertaining to the physico-chemical evaluation is presented on fresh basis and data regarding nutritional evaluation is presented on dry matter basis. The selected five blocks viz Karsog, Mandi, Sundernagar, Seraj and Chauntra have been represented as B_1, B_2, B_3, B_4 and B_5 (Fig. 1).

Fig. 1: Map showing blocks of district Mandi, Himachal Pradesh

3. RESULTS

Sagot, the traditional food item prepared from fat-layered refined wheat flour balls is consumed during marriage/other occasions by soaking them in sweetened milk. It is also gifted to bride by her parents and to the brother by her sister on *bhai-duj* festival.

"Ingredients and manufacturing aspects of Sagot"

General recipe

Sagot

Ingredients

Refined flour   1kg

Water   250ml

Ghee   for deep frying

4. METHOD

Sifted the refined flour in a large wide-mouthed pan. Added water and mixed to the flour slowly with hands, kneaded the

flour into a soft and pliable dough. Made dough ball with hands. Flattened the ball from one edge and applied ghee over it, and rolled into a roll. Divided the roll into two pieces with the help of the thread and kept the pieces for an hour. Flattened the pieces with one hand and deep fried in hot oil until golden colour appears. Steps involved in preparation of *sagot* showed in Fig. 2.
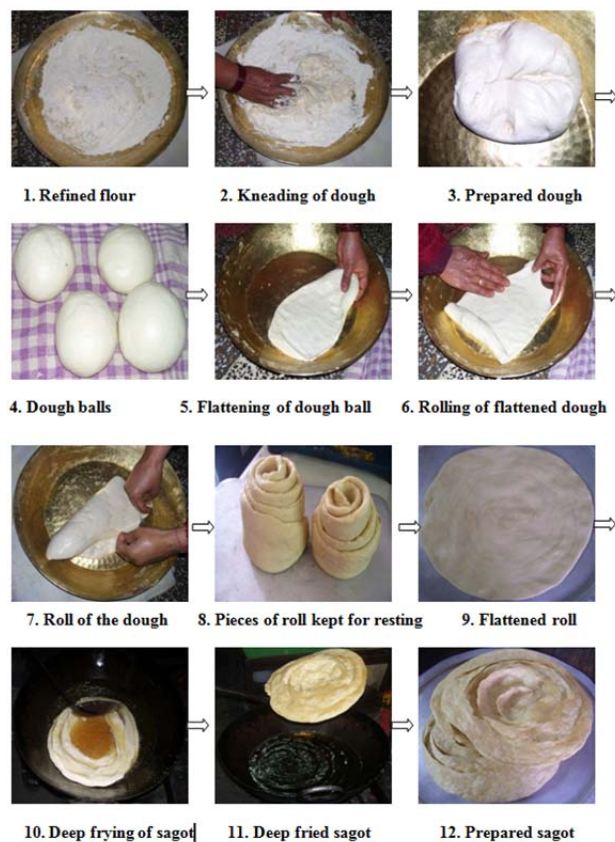

Fig. 2: Steps involved in preparation of *sagot*

"Physico-chemical, nutritional and Organoleptic evaluation of *sagot*" Data pertaining to the physico-chemical and nutritional evaluation of *sagot* is presented in the Table 1. *Sagot* belonging to all the blocks were golden yellow in colour and round and spiral in shape. Maximum diameter, circumference, individual weight and bulk density was found in B_3 and minimum in B_5. Highest pH was found in B_3 (6.98) followed by B_1 (0.18), B_2 (0.17), B_3 (0.17) and B_4 (0.16).

Highest value for moisture was observed in B_4 (5.60%) followed by B_2 (5.00%), B_3 (4.70%), B_5 (4.36%) and B_1 (4.00%). Crude fat and ash was found maximum in B_1 *sagot* and crude fiber and total carbohydrates in B_5.

Reducing sugars and non reducing sugars was observed highest in B_4 (1.59%) and B_2 (0.43%) and lowest in B_1 and B_3 with values of 1.31 and 0.19% respectively. Calcium content was highest in B_3 (15.00mg/100g) followed by B_4, B_2, B_5 and

B_1 with values of 14.50.14.25, 14.00 and 12.50%, respectively. Iron was highest in B_1 (6.00mg/100g) followed by B_2 (5.20), B_4 (5.00), B_5 (4.50) and B_3 (3.25). All the treatments had significant relationship for the analysed nutritional parameters. Statistical analysis showed that all the treatments varied significantly with each other. Crude fat and ash was found maximum in B_1 *sagot* and crude fiber and total carbohydrates in B_5

Table 1: Physico-chemical and Nutritional evaluation of *sagot* of five blocks

Parameters	Blocks					CD≤0.05
	B1	B 2	B 3	B 4	B 5	
Physico-Chemical						
Colour	Golden-yellow	Pale-White	Golden-yellow	Golden-yellow	Golden-yellow	---
Shape	Spiral& Round	Spiral& Round	Spiral& Round	Spiral& Round	Spiral& Round	---
Size(cm)						
i. Diameter	21.72	23.17	25.17	22.17	21.37	0.515
ii. Circumference	62.38	64.18	65.17	63.17	63.34	0.654
iii. Thickness	2.97	4.52	3.17	3.00	3.34	0.337
Individual weight (g)	137.67	140.00	141.00	137.33	136.33	0.813
Bulk –Density (g/g)	0.25	0.33	0.32	0.22	0.22	0.005
Ph	6.95	6.90	6.98	6.96	6.95	0.004
Titrable acidity (%)	1.80	1.68	1.68	1.61	1.86	0.147
Nutritional						
Moisture (%)	4.00	5.00	4.70	5.60	4.36	0.282
Crude Fat (%)	27.58	23.55	25.22	20.92	23.10	0.018
Crude protein (%)	9.48	9.75	10.83	10.35	9.80	0.560
Crude fiber (%)	0.08	0.06	0.04	0.22	0.44	0.020
Ash (%)	0.70	0.17	0.34	0.31	0.36	0.061
Total carbohydrates (%)	62.22	66.50	63.58	66.70	66.71	0.331
Reducing sugars (%)	1.31	1.35	1.58	1.59	1.31	0.019
Non-Reducing sugars (%)	0.25	0.43	0.19	0.25	0.25	0.023
Total sugars (%)	1.51	1.79	1.78	1.53	1.56	0.047
Calcium (mg/100g)	12.50	14.25	15.00	14.50	14.00	0.040
Iron (mg/100g)	6.00	5.20	3.58	4.83	4.50	0.454

Table 2. represents the organoleptic scores of *sagot* prepared in five different blocks of district Mandi. B_3, B_4 and B_5 competed equally for the sensory parameters hence were remarked as 'liked very much' by the evaluators. Though all sensory parameters had their equal individual importance, texture is the main attribute in *sagot* that is assessed by the consumers while buying. The amount of fat added and applied evenly in layers during its preparation affect the texture greatly, therefore significant difference was calculated for flavor and texture and non-significant for rest of the attributes.

Table 2: Organoleptic evaluation of *sagot*

Sensory parameters	B1	B2	B3	B4	B5	CD≤0.05
Colour	7.60	7.80	8.00	8.00	7.80	NS
Taste	7.30	8.00	7.90	8.10	8.10	NS
Flavour	7.80	7.40	8.10	8.10	8.10	0.43
Texture	7.30	7.00	8.00	7.90	8.20	0.51
Overall acceptability	7.50	7.55	8.00	8.02	8.05	NS

5. CONSUMER ACCEPTABILITY

The studies of traditional foods pertaining to different regions which constituted diverse ingredients and processing techniques. These foods were reported to be unique, simple in character, composition and method of preparation besides

being cheap and affordable. Variation in nutrient composition of various traditional and value added traditional foods were reported reflecting variation in ingredients and processing protocols employed. Various experiments for value addition and standardization reported avenues for industrial application of these ethnic foods.

6. CONCLUSION

There is not much variations in manufacturing techniques of *Sagot* of 5 Blocks of Mandi District still the variation obtained could be due to the ingredients proportions Refined flour, kneading of dough, Prepared dough, Dough balls, Flattening of doughball, Rolling of flattened dough, Roll of the dough, Pieces of roll kept for resting, Flattened roll, Deep frying of sagot, Deep fried sagot and Prepared sagot. This food could be showcased as typical Traditional Himachali food.

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