MATERIAL AND METHODS
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The experiment was designed to study the palatability and nutritive value of omelets prepared with the incorporation of carbohydrate rich flours. The steps involved are discussed under the following heads.

(A) PREPARATION OF OMELETS

1. STANDARD OMELET

a) Selection of equipments and their use:

Following equipments were used for the preparation of standard omelet.

1. Gas burner - to cook
2. Frying pan - to cook the omelet.
3. Vessel - to keep the egg solution and to mix it with spoon.
4. Measuring cylinder - to measure the egg solution.
5. Bowl - to beat the egg solution.
6. Table spoon - to measure water.
7. 1/4th standard spoon - to measure salt and pepper powder.
8. Steel spatula - to take out omelet from the pan.
9. Knief - to cut the sample into six equal pieces.

b) Ingredients used and their sources:

The ingredients used for the preparation of standard omelet are as given below.

1. Eggs - fresh eggs were purchased from the local market daily.
2. Vegetable fat, one kg. packet of Tata's iodised salt and pepper seeds were purchased from local market.
c) Proportions of ingredients and the procedure:

Table No. 1: Proportion of different ingredients in standard omelet.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Ingredients</th>
<th>Quantity used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Egg solution</td>
<td>50 ml</td>
</tr>
<tr>
<td>2.</td>
<td>Salt</td>
<td>to taste</td>
</tr>
<tr>
<td>3.</td>
<td>Pepper powder</td>
<td>a pinch</td>
</tr>
<tr>
<td>4.</td>
<td>Vegetable fat</td>
<td>1/4th standard spoon</td>
</tr>
<tr>
<td>5.</td>
<td>Water</td>
<td>-</td>
</tr>
</tbody>
</table>

Procedure for standard omelet:

1. 50 ml of egg solution was measured by a measuring cylinder and poured in clean, empty bowl. It was beaten with a rotary beater till sufficient foam was formed.

2. Salt and pepper powder were added to the egg solution and mixed well.

3. Frying pan was heated on a gas burner. Vegetable fat was added and when the fat melts, the solution was poured and spread evenly in the pan and cooked well.

4) Standardization of recipe:

Procedure for preparation of plain omelet as given by Swaminathan was selected for the standardization. Standard omelet was prepared by using 50 ml of egg solution.
2. EXPERIMENTAL OMELETS:

a) Selection of equipments and their use:

Following equipments were used for the preparation of experimental omelets:

1. Gas burner - to cook
2. Sumeet mixer - to make flour
3. Sieve - to sieve flour
4. Physical balance - to weigh flour
5. Frying pan - to cook omelet.
6. Vessels - to keep the egg solution and to mix it with spoon.
7. Measuring cylinder - to measure the egg solution.
8. Bowls - to beat the egg solution and to mix the flours in different samples.
9. Table spoon - to measure water.
10. 1/4th standard spoon - to measure salt and pepper powder.
11. Steel spatula - to take out omelet from the pan.
12. Knief - to cut the each sample in six equal pieces.

b) Selection of ingredients and their sources:

1. Eggs - fresh eggs were purchased from the local market daily.

2. Vegetable fat, one kg. packet of Tata's iodised salt and pepper seeds were purchased from local market.

3. 1 kg. of rice, wheat, bajara and jowar were purchased from local market. 400 gm net purity Indian barley manufactured by Reckitt and Colman of India Ltd. was purchased. 400 gm net corn flour of Eagle brand manufactured by Eagle products, Bombay was purchased. Arrowroot and water chestnut were
purchased in powdered form as they were available in local market. Ragi seeds was purchased from Bombay as it was not available in local market.

c) Proportions of ingredients and the procedure:

Table No. 2: Proportion of different ingredients in experimental omelets.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Ingredients</th>
<th>Quantity Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Egg solution</td>
<td>(50 - X) ml.</td>
</tr>
<tr>
<td>2.</td>
<td>Flour</td>
<td>X gm*</td>
</tr>
<tr>
<td>3.</td>
<td>Salt</td>
<td>to taste</td>
</tr>
<tr>
<td>4.</td>
<td>Pepper powder</td>
<td>a pinch</td>
</tr>
<tr>
<td>5.</td>
<td>Vegetable fat</td>
<td>1/4th standard spoon.</td>
</tr>
<tr>
<td>6.</td>
<td>Water</td>
<td>one table spoon.</td>
</tr>
</tbody>
</table>

Procedure for experimental omelets:

1. Egg solution was taken in a bowl and mixed thoroughly with a spoon. (50 - X) ml. of egg solution was measured by a measuring cylinder and solution was poured in another, clean empty bowl. It was beaten with a rotary beater till sufficient foam was formed.

2. By using physical balance Xgm of carbohydrate rich flour was weighed and added to the solution.

* Xgm = 5 gm, 10 gm, 15 gm, 20 gm, and 25 gm for different samples.
3) Salt, pepper powder and table spoon of water were added to the egg solution and all the components were mixed well.

4) Frying pan was heated on a gas burner. Vegetable fat was added and when the fat melts the solution was poured and spread evenly in the pan and cooked well.

d) **Standardization of recipe**:

In standardization of experimental omelets it was very important to adjust the ratio of flour to egg solution. To adjust this ratio omelets were prepared several times by taking different proportions of flour and egg solution. When proportion was fixed, omelets were prepared by using the nine different flours to see whether the ratio works correctly to all the flours. While standardizing the recipe it was found that the omelet solution became thick when flour was added. So one table spoon full of water was added in each sample. In this way standardization was done.

(b) **SENSORY EVALUATION OF STANDARD OMELET AND EXPERIMENTAL OMELETS**:

1. **Preparation of score card**:

In order to assess the palatability and acceptability of omelets the scoring test was used. The qualities listed in the score card were those which are commonly observed in omelets. These were appearance, texture, taste, mouthfeel and acceptability. The score card is shown in Appendix Table No.1.
Appearence:

The first appraisal of food is colour, part of the acceptance of food depends upon how it looks as the colour attracts the man towards the particular product.

Colour plays an important factor in judging the quality of food. Colour is generally influenced by the food application and quality, especially by the consumer to a large extent. Palatability often spoken as eating quality may be defined as the relative acceptability or appetite appeal of food.

In score card the description of appearance ranged from superior to inferior. Total scores given were in descending order i.e. from 10 to 4. The description were good, fair, moderate and poor. For good 10 marks were given. Poor carried 4 marks. Definate colours were not given in the description because omelets with different flours showed different colours and so it was felt difficult to keep one common colour for all. So the score card carried good, fair, moderate and poor as the description for appearance.

Texture:

Each food has its special identifying texture depending upon its composition, its physical state and the size and the form of the air cells it contain. Texture includes such qualities as smooth, spongy, hard, porous, granulated etc. Texture includes such qualities as smooth, spongy, hard,
Texture is a factor of utmost importance in the evaluation of products. Texture can be defined as the mixed experience derived from sensation of food in mouth. It affects the overall quality of product. The good quality of omelet should be soft and spongy. Lowe states that good texture and good flavour are closely related. If the texture is excellent flavour is also related high.

In texture the descriptions were soft and spongy, slightly soft, slightly tough, tough and rubbery. Soft and spongy texture was superior and carried 10 marks. Slightly soft texture had 8 marks, slightly tough carried 6 marks. Tough and rubbery texture was inferior and carried 4 marks.

Taste:
According the Lowe taste should be rated higher. Texture, appearance of tenderness, however the good external may be, but it would be immediately rejected by a person if the taste is not to his liking.

In taste-description ranged from superior to inferior. Very good taste carried 10 marks, good carried 8 marks, fair carried 6 marks and poor taste carried 4 marks.

Mouthfeel:
Mouthfeel plays an important role in acceptance of food. The way food feels in the mouth is termed as 'mouthfeel'.

In score card smooth mouthfeel was termed superior and carried 10 marks. Other descriptions were grainy, coarse and lumpy. They carried 8, 6 and 4 marks respectively.
Acceptability:

Particular food may be nutritious but there are several complex factors which combine to influence the public's acceptance, selection and sensory properties, such as aroma and taste, texture, cost of the product etc. The extent to which the sensory properties modify the selection and utilization of a food is difficult to ascertain since all these factors interest and influence to consumers decision.

In acceptability description ranged from acceptable to not acceptable. Acceptable carried 10 marks. Fairly acceptable carried 8 marks, slightly acceptable carried 6 marks and not acceptable carried 4 marks.

2. Selection of Judges:

According to Manay et al one extremely discriminating painstaking and unbiased individual would suffice for tasting. However, human judgement is individual and is not always consistent. Physical conditions of the individual, psychological factors and environmental factors may affect one's judgement. Further one individual may not be able to discriminate different aspects of the food quality. For these reasons, for sensory evaluation a panel of judges is used.

An individual having 1) good health (2) ability to discriminate easily between samples with appreciable difference in taste and smell (3) high personal integrity, (4) interest in sensory analysis of samples, and (5) willingness to spend time for the sensory evaluation work were selected.
Persons possessing the above qualities as per qualities of an ideal panel member were enlisted for the panel training. They were given simple tests for identifying known samples with varying tastes. After studying their responses those, who were consistent in pointing out the different characteristics of the samples were selected to constitute the panel. In this way six judges were selected.

3. Execution of sensory evaluation:

On the basis of the standardized procedure experiments were conducted in the Food and Nutrition Laboratory of Home-Science Department of Amravati University at the best time for conducting test i.e. 9 A.M. and 11 A.M. for getting uniform results. The testing was done at a time when the panel members were fresh.

1. Arrangement of panel table:

Panel table was arranged in airy room. Room received sufficient air and light. Panel table was sufficiently big so that all the panel members can sit comfortably. It was covered with white table cloth. Before the experiment dishes were kept ready. Fork and knife were kept in each dish. Glasses were filled with water and covered by glass plates. Score card was kept below each dish.

2. Arrangement of work-up area:

Work-up area was divided into kitchen and serving area. In kitchen gas burner was kept. All other equipments which were needed for omelet preparation were kept in cupboard. Sumeet mixer was kept in the corner. Two wooden tables were arranged in kitchen to keep the equipments. Dish washing area was behind the kitchen.
3. Conducting the experiment:

To carry out the study following steps were taken.

Nine different experiments were carried out. In each experiment, experimental omelets were prepared by using different carbohydrate rich flour namely, rice, wheat, bajara, jowar, corn, ragi, barley, arrowroot and water chestnut flours. Each experiment was carried out for three consecutive days. So twenty seven days were required to finish the experiment.

Some pre-preparations were done before the experiment started. Solutions for experimental omelets and for standard omelet were kept ready in the bowls as given in the procedure. Experimental omelets were prepared by using Xgm flour where X is 5 gm, 10 gm, 15 gm, 20 gm, and 25 gm flour for different samples.

Experiment was started as soon as the judges arrived. Omelets were prepared one after the other, immediately cut into six equal pieces and served hot. Code number was given to each sample. As soon as judges finish one sample, next sample was ready. It was difficult to carry all these tasks by one person. So for cutting and serving the omelets help was taken by laboratory attendant. The scores given by different judges were collected. The experiment was conducted keeping all the conditions identical. Due care was taken to maintain the homogeneity in preparations of products to control the variation within the product. In this way each experiment was carried out.
Statistical analysis:
Scores given by the judges were collected. Mean scores of all the omelets and of their different characteristics were calculated. Characteristics of experimental omelets were compared with that of standard omelet to find out any significant differences by applying 't' test. In the same way each experimental omelet was compared with standard omelet by applying 't' test. Nutritive value of each omelet was calculated by using 'Nutritive value of Indian Foods' published by Indian Council of Medical Research.