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Original Research Article

Comparatively Study for Sensory Quality of Dehydrated Onion Upma and Utthpam

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A B S T R A C T

The mean sensory score of colour in onion upma and uttapam was varied 9.00 to 6.50 and 8.50 to 6.76. The initial value of colour was higher (9.00) in dried onion upma as compare to dried onion uttapam (8.50) where as the final value of colour in dried onion upma was less (6.50) as compare to uttapam (6.76). Mean sensory score of flavor in dried onion upma and uttapam varied was 8.80 to 6.86 and 8.80 to 6.43. The initial value of upma and uttapam was same (8.80) whereas the final value of flavor (6.86) in upma was higher than uttapam (6.43). In case of texture mean sensory score of upma and uttapam varied was 8.00 to 5.50 and 8.50 to 6.83. The initial and final value of texture in uttapam was higher as compare to upma. In case of taste mean sensory score of upma and uttapam was 9.00 to 7.20 and 8.50 to 6.33. The initial and final value of taste was higher in upma as compare than uttapam. The mean sensory score of overall acceptability in upma and uttapam was varied 9.00 to 7.26 and 8.00 to 6.10. The initial and final value of overall acceptability was higher in upma as compare than uttapam. So finally we can say that in case of colour and texture uttapam was well accepted after 90 days as compare to upma whereas in case of flavor, taste and overall acceptability the upma was well accepted after 90 days as compare to uttapam.

Keywords

Upma, Uttapam, Colour, Texture, taste, Aroma and overall acceptability

Introduction

India is the second largest producer of onion after china. The four major onion producing countries in the world are China (20.56 million tonnes), followed by India (12.15 million tones,) USA (3.60 million tonnes) and Turkey (1.86 million tonnes) reported by Food Agriculture Organization, 2014). India exports onions to Bangladesh, Malaysia, UAE, Sri Lanka and Nepal (National Horticulture board, 2014). Maharashtra is the largest producer of onion in India with a market share of 29%, followed by Karnataka with a market share of 22.35% and Gujarat with a market share of 10.39%, Uttar Pradesh

with a market share 8.39%. Karnataka has almost tripled its production in onions in past 2 years, whereas Gujarat's production is decreased by almost 37% when compared to last year (National Horticulture board, 2013). In India Maharashtra is the largest producer followed by Madhya Pradesh, Karnataka, Gujarat, Bihar, Andhra Pradesh, Rajasthan, Haryana, Tamil Nadu, Uttar Pradesh, West Bengal, Uttarakhand, Chhattisgarh and Punjab (Indian Horticulture Database Book, 2013). The sensory evaluation is a scientific discipline used to measure, analyzed and interpret result of those characteristics of food and material which are perceived by the sense of smell, taste, touch and hearing. As the definition implies, the sensory evaluation involve the measurement and evaluation of sensory properties of food and other material Stone and Sidel (1993).Reece (1979)reported that A success full implementation of sensory evaluation programme requires three major components, namely, proper laboratory facilities, sensory panels, and rigorous training programme

Ranganna (2005) reported that quality is ultimate criterion of the desirability of food product of the consumer. Overall qualities depend upon the quantity, nutrition and other hidden attributes and sensory quality. The absence of nutritional qualities and presence of harmful or toxic ingredient are the parameters which are vital to consumers. Ranganna (2005) Sensory quality is a sense of perception coming in to play in choosing and eating of food. The sensory attributes includes colour, flavour, texture and taste. As far as human being is concerned, it is generally agreed that the sense of taste is limited to sweet, sour, salty and bitter. Feeling is an attribute which is of significance to flavour especially in spices, wine, coffee, etc. Another dimension of the food quality, the affective characteristics, is not the property of food, but the subjects, reaction to the sensory qualities of foods. This reaction is highly conditioned by a variety of physiological and social factors and, in the final analysis, plays a vital role in the acceptance and preference of foods (Ranganna, 2005). Since for good health, the enjoyment of food is essential. The enjoyment means choice and acceptance, and not always nutrition and wholesomeness Solms and Hall (1981). Thus, for consumer, the sensory attributes like colour, appearance, feel, aroma, taste and texture are the deciding factors in food acceptance. According to the Sensory Evaluation Division of the Institute of Food Technologists Anon (1975)the sensory evaluation is defined as a scientific discipline used to measure, analyze and interpret results of those characteristics of foods and materials which are perceived by the senses of sight, smell, taste, touch and hearing. Vie *et al.,* (1991) recommended calculating R indices for 9-point Hedonic scale data.

Akbari *et al.,* (2006) The organoleptic quality in term of colour, flavour, taste (pungency), texture (crispness) and overall acceptability of all dehydrated samples were determine using the sensory evaluation technique. A panel of 6 judges was requested to evaluate the samples using a 10-point scale as per the standard procedure.

The Dehydrated onion powder offered by us is also used in preparations of soups, sauces, upma, uttapam food preparations, vegetable, stuffing mixes, fast foods etc. Upma is a common South Indian and a very popular Karnataka breakfast dish, cooked as a thick porridge from dry roasted semolina. Various seasonings and/or vegetables are often added during the cooking, depending on individual preferences. In Karnataka, it is also served with another popular sweet dish of Karnataka Kesaribhath, both in equal quantity in one plate which is very popularly called as the

"Chow Chow Bath where as Uttapam or oothappam or Uthappa is a dosa-like dish made by cooking ingredients in a batter. Unlike a dosa, which is crisp and crepe-like, uttapam is a thick pancake, with toppings disambiguation needed cooked right into the batter. Uttapam is sometimes characterized as an Indian pizza.

Materials and Methods

The matured, fresh onions, medium size, free from diseases and insects, were procured from the local market of Meerut and used for the present investigations. The onion bulbs then thoroughly cleaned to remove any dirt or dust particles attached to the surface in laboratory. Then the sorted cleaned onions were peeled and cut into required thickness with a hand operated slicer and then drying. Dried onion slices converted in onion powder and finally onion powder is use in preparation in upma and uttapam (Table 1).

Method for preparation of Upma

Dry-roast Semolina (rava) until it just begins to turn brown, then keep aside. In a large saucepan/wok, heat the cooking oil and mustard seeds and wait for them to sputter. Then add cumin, ginger, green chillies and chopped onions and fry until onions caramelize. Add vegetables, salt and 2 cups of water, and bring to boil and add the roasted rava, turn down the heat, and mix quickly to avoid lumps forming. The upma is done when all the water is absorbed by the rava.

Method for preparation of onion Uttapam

Finely chop the large onion and other ingredients needed. Slice the shallots very thin. Spoon 1 or 1 & 1/2 ladle full of the batter in hot greased dosa pan. Sprinkle generously the chopped onions fully covering the top. Sprinkle other ingredients if desired. Drizzle a tsp of oil. You can add few drops of ghee if desired. Cook in medium fame. After a minute or two, flip the uttapam and cook in low flame for 2 minutes or until the onions get golden brown and crisp. Use the idli batter without stirring. Then only you will get soft and spongy, crisp uttapam. The consistency of the batter plays key role in the taste and texture of the uttapam. If the batter is too thick or stirred or the last remaining batter, then uttapam also will be hard and will not turn golden and crisp. Sprinkling over the dosa is recommended method, rather than mixing in batter. Only then the onions will get caramelised and give a nice look and taste, mainly. This same uttapam can be made in kadai also, for a great taste. Using cast iron thick dosa pan gives a nice even browning and crisp uttapam than the non-stick pan. Cooking in low flame after flipping is important to get the colour. But for every uttapam before pouring the batter, let the pan get heated properly.

Results and Discussion

Sensory evaluation of dried onion upma and uttapam

The mean sensory score of colour in onion upma and uttapam varied 9.00 to 6.50 and 8.50 to 6.76 shows in table 2 and 8. Table 2and8show the initial value of colour was higher (9.00) in dried onion upma as compare to dried onion uttapam (8.50) where as the final value of colour in dried onion upma was less (6.50) as compare to uttapam (6.76).

Table 2 and 8 show the mean sensory score of flavor in dried onion upma and uttapam varied was 8.80 to 6.86 and 8.80 to 6.43. The initial value of upma and uttapam was same (8.80) whereas the final value of flavor (6.86) in upma was higher than uttapam (6.43). Table 2 to 8 shows the mean sensory score of texture in upma and uttapam varied was 8.00 to 5.50 and 8.50 to 6.83 (Fig. 1 and 2).

Table.1 Ingredients of onion upma and uttapam

Upma		Uttapam	
Ingredient	Quantity	Ingredient	Quantity
Semonila (Rava)	1 cup	Large onion	2 peace
Cooking Oil	3 table spoon	Shallots/ Small Onion	½ cup
Mustard Seed	1/2tsp	Chopped Carrot	2tblsp
Ginger	½ tsp	Green Chilli Chopped	1 peace
Cumin	1 tsp	Oil	2table/uttapam
Green chilli	3-5 med chopped	Ghee	Optional as needed
Chopped onion	1 med chopped	-	-
Great Coconut	3-4 table optional	-	-

Table.2 Mean sensory score for dried onion upma during different storage periods

Storage time (days)	Sensory score of upma at different days				
	Colour	Flavour	Texture	Taste	Overall acceptability
0	9.00	8.80	8.00	9.00	9.00
15	8.16	8.50	7.10	8.53	8.43
30	7.83	8.23	6.76	8.40	8.10
45	7.50	7.76	6.63	8.06	7.93
60	7.23	7.40	6.23	7.76	7.66
75	6.93	7.00	6.03	7.60	7.50
90	6.50	6.86	5.50	7.20	7.26

Table.3 ANOVA for change in colour of upma during storage periods

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Rows	1377.624	6	229.6039	2.661305	0.556673	0.838003
Columns	7375.184	3	2458.395	8.972588	0.000751	3.159908
Error	4931.811	18	273.9895			
Total	13684.62	27				

Table.4 ANOVA for change in flavour of upma during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*	*Result*
Rows	1365.787	6	227.6312	2.661305	0.562959	0.82865	Significant
Columns	7267.278	3	2422.426	8.818399	0.000821	3.159908	Significant
Error	4944.624	18	274.7013				
Total	13577.69	27					

Table.5 ANOVA for change in texture of upma during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*	*Result*
Rows	1355.034	6	225.8389	2.661305	0.568758	0.820075	Significant
Columns	7738.481	3	2579.494	9.366763	0.000598	3.159908	Significant
Error	4956.984	18	275.388				
Total	14050.5	27					

Table.6 ANOVA for change in taste of upma during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*	*Result*
Rows	1402.329	6	233.7215	2.661305	0.543531	0.857771	Significant
Columns	7156.318	3	2385.439	8.754693	0.000853	3.159908	Significant
Error	4904.559	18	272.4755				
Total	13463.21	27					

Table.7 ANOVA for change in over all acceptability of upma during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*	*Result*
Rows	1410.974	6	235.1624	2.661305	0.538989	0.864674	Significant
Columns	7192.873	3	2397.624	8.815875	0.000823	3.159908	Significant
Error	4895.4	18	271.9667				
Total	13499.25	27					

Table.8 Mean sensory score for dried onion uttapam during storage periods

Storage time (days)	Sensory score of uttapam at different days				
	Colour	Flavour	Texture	Taste	Overall acceptability
0	8.50	8.80	8.50	8.50	8.00
15	8.13	8.00	8.00	8.00	7.63
30	7.83	7.63	7.80	7.80	7.33
45	7.66	7.36	7.63	7.53	7.10
60	7.40	7.13	7.33	7.10	6.76
75	7.10	6.90	7.00	6.80	6.40
90	6.76	6.43	6.83	6.33	6.10

Table.9 ANOVA for change in colour of uttapam during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*	*Result*
Rows	1406.547	6	234.4245	2.661305	0.541296	0.861163	Significant
Columns	7332.534	3	2444.178	8.978731	0.000748	3.159908	Significant
Error	4899.936	18	272.2187				
Total	13639.02	27					

Table.10 ANOVA for change in flavour of uttapam during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	1362.6	6	227.1	2.661305	0.564674	0.826109
Columns	7396.15	3	2465.383	8.968183	0.000753	3.159908
Error	4948.26	18	274.9033			
Total	13707.01	27				

Table.11 ANOVA for change in Texture of uttapam during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	1411.564	6	235.2607	2.661305	0.538659	0.865176
Columns	7349.481	3	2449.827	9.009291	0.000735	3.159908
Error	4894.601	18	271.9223			
Total	13655.65	27				

Table.12 ANOVA for change in Taste of uttapam during storage periods

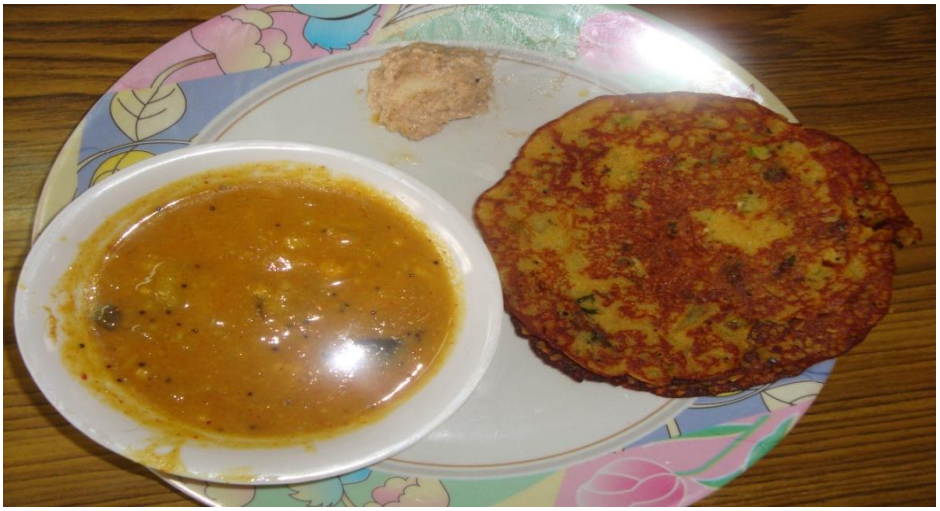
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*	*Result*
Rows	1366.482	6	227.747	2.661305	0.562563	0.829236	Significant
Columns	7407.851	3	2469.284	8.990759	0.000743	3.159908	Significant
Error	4943.644	18	274.6469				
Total	13717.98	27					

Table.13 ANOVA for change in overall acceptability of uttapam during storage periods

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	1384.644	6	230.774	2.661305	0.552891	0.843661
Columns	7562.459	3	2520.82	9.215577	0.000652	3.159908
Error	4923.701	18	273.539			
Total	13870.8	27				

Fig.1 Onion upma

Fig.2 Onion uttapam



The initial and final value of texture in uttapam was higher as compared to upma. Table 2 and 8 show the mean sensory score of taste in upma and uttapam was 9.00 to 7.20 and 8.50 to 6.33. The initial and final value of taste was higher in upma as compare than uttapam. The mean sensory score of overall acceptability in upma and uttapam was varied 9.00 to 7.26 and 8.00 to 6.10. 2and8 show the initial and final value of overall acceptability was higher in upma as compare than uttapam. So finally we can say that in case of colour and texture uttapam was well accepted after 90 days as compare to upma whereas in case of flavor, taste and overall acceptability the upma was well accepted after 90 days as compare to uttapam.

In case of colour and texture uttapam was well accepted after 90 days as compare to upma whereas in case of flavor, taste and overall acceptability the upma was well accepted after 90 days as compare to uttapam.

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