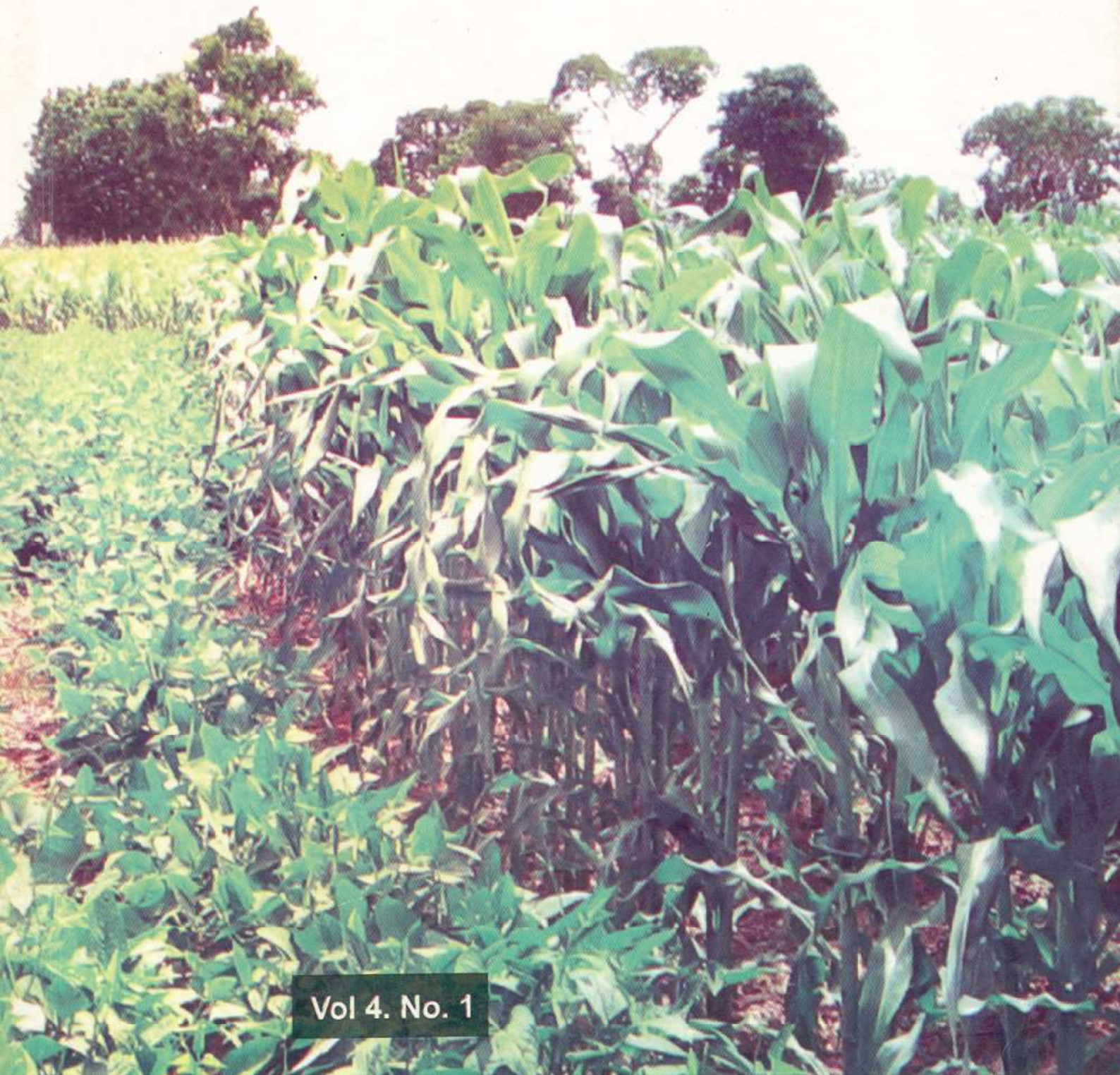




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# Assessing the sensory qualities and acceptability of commonly consumed indigenous dishes for tourism development in Lagos and Ogun States, Nigeria

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## Abstract

The study investigated the sensory qualities of some commonly consumed indigenous dishes in southwest region of Nigeria. Sensory attributes (appearance, texture, taste, aroma and overall acceptability) were the quality attributes assessed and the correlation analysis of the contribution of the mean scores of the attributes to overall acceptability of the dishes were determined. The result shows the ranges of mean score of attributes with appearance (3.42 to 7.22), texture (3.44 to 7.12), taste (3.36 to 7.53), aroma (3.09 to 6.61) and overall acceptability (3.51 to 7.39). Also, the results of the correlation analysis shows that most of the attributes of the dishes are positively related to the acceptability of the dishes ( $p < 0.01$ ). The result ( $p = 0.258$ ) ( $r = 0.062$ ) showed that the dish of ewuro elegusi was rated the highest among all the sensory attributes while amuriki was rated lowest. The study showed that vegetables play an important role in the sensory qualities of indigenous dishes and most of the dishes were acceptable to the visiting tourists in the study area.

**Keywords:** Indigenous dishes, sensory attributes, correlation analysis, tourists.

## Introduction

Every recognized indigenous food has its own image which will only be partially related to nutritional or sensory qualities. No two individuals will conceive any food stuff in exactly the same way, owing to personal histories locality and culture. Nevertheless, communities of 'taste' and 'tradition' develops and persist within families, localities, religious, ethnic groups, and political affiliations, sect memberships, sporting societies or philosophical orientations. Indeed, most social groupings, at whatever scale, probably have different food taste (WFP, 2001).

Whether we call it habit, familiarity or traditions, the power that makes us eat a particular food and keeps on eating it without tiring, and continue to consume it in future should not be underestimated. In studies of social movement and the formation of sects and dissidents groups, the role of food cannot be underestimated. In adhering to some dietary rules, what to eat, or when not to eat, groups maintain control over their member. They also require members to deviate from the general population when they venture outside their group (Schafer, 1998). The words indigenous are used because these foods are truly native to the sub region, their wild forms can still be found in the West African sub region (Annegers, 1993). They contrast with what could be called traditional foods, which initially were foreign to the sub region. They were introduced and have been grown and consumed by early West Africans from one generation to another. This differentiation points to the facts that there are today in the sub region several foods crops which many would be willing to bet are indigenous West African foods, but which are in truth exotic, that is brought in from outside West Africa. There is no gain saying that food is a good vehicle for intraregional cultural exchange. Just as certain foods are peculiar to Africa, so also within the sub region some foods are true ambassadors of certain countries (Fosket and Kinton, 2005). Even from economic and nutritional points of view, the intraregional food exchanges would ensure dietary variability at all socio-economic levels within the subregion. African foods and food products are only given their deserved places of honour in specialty stores and restaurants in Europe, America, and the Caribbean. One can argue that most of these foods in their usual fresh form are not suitable for long storage and transportation – a major handicap to intraregional and intraregional food trade (WFP, 2001).

In this regard, the food industries in the sub region have an essentially prominent role to play in fostering West African food culture. It is clear to many consumers that the taste of a food is crucial parameter in determining its acceptability. Sensory evaluation has been described as a scientific discipline to evoke measure, analyze, interpret reactions to those characteristics of foods and materials as they are perceived by the senses of sight, smell, taste, touch and hearing (Lawless, 1993 and Ison, 1994). The measurement of these sensory properties provides a number of problems, including whether to measure the degree of sensory experience or simply the hedonic relation to the food (Ihekoroyen and Ngoddy, 1985).

In the present drive towards success in tourism development in Nigeria, the hoteliers and tourism sectors need to understand the new generation tourists in terms of culture, cuisine and expectation. Poon (1999) and Okhiria, (2010) in their thesis identified change in values, attitudes and aspiration between "Old" and "new" generation tourists'. She observed, "Old tourists see themselves as culturally superior to their hosts and demand home cooking and home facilities abroad. They often cause high impacts and are seeking relaxation". On the other hands the new generation Tourists "want to experience local cuisine and local life and understand a destination's culture and heritage". They are environmentally sensitive an are seeking new experiences. However, the study is aimed at determining the sensory acceptability of the indigenous dishes obtained from Lagos and Ogun State, Nigeria by the visiting local and international tourists.

## Materials and Method

### Study area

The study was carried out in five selected states of Ogun and Lagos. This is based on the fact that the region is one of the Tourists circuit regions in the country as indicated in the Nigeria Development corporation policy of 1994 for adequate and easy management of tourism South West. Nigeria is predominantly Yoruba people having different tribes with diverse culture and dialects but are bound together by the same language. They share the same food culture but diverse dishes and dietary patterns.

### Sampling Technique

The most commonly consumed indigenous dishes were collected from the indigenes by Snowball approach, this involve approaching the traditional heads of each community chosen for the study. He led us to the market women leader, who in turn will identified women who are versatile in the knowledge, identification and cooking procedures of the indigenous dishes.

Five (5) dishes were thus randomly selected from each state through structured questionnaire that assessed dishes possible availability, accessibility, affordability and frequency of consumption pattern. A total number of ten (10) indigenous dishes were thus obtained from the two states under study.

The dishes selected from the two states under study are; (total 10 dishes)

#### Ogun State

- Obe bokonisa with eba tutu (*Coriandrum satium spp*)
- Efo yonri with cold pap (*Herbal leaves with maize gruel*)
- Ogbolo with fufu (*Urvingia gabonensis spp*)
- Opoporu with amala (*Phaseolus vulgaris spp*)
- Ebiripo with pepper sauce (*Cocoyam and pepper based*)

#### Lagos State

- Ewuro elegusi with laafun (*Bitter leaves and cassava based*)
- Gbure oloboro with eba (*Water leaves and cassava*)
- Obe dudu with rice (*Green pepper, fish and rice based*)
- Imoyo eleja with imoyo eba (*Fish and cassava based*)
- Alapa akan with boiled rice

## Dishes preparation and Cooking

The preparation and the cooking was carried out using local ingredients, methods and utensils, but the recipes were selected and utilized in accordance with Oguntona et al (1999) and USDA, (1998) standardized recipes procedures. The recipes of the dishes were purchased from Mile 12 market, Lagos and Lafenwa market, Ogun State. The preparation and the cooking were however, carried out at the kitchen of Airport Hotel in Lagos. All the ingredients used were weighed, washed and cooked with the appropriate spices as done locally in order to obtain the peculiar flavor and taste. The cooked dishes were served to the pre-arranged food panelists.

## Sensory Evaluation of the Indigenous Dishes

The sensory evaluation was carried out in Lagos Airport Hotel. This Hotel was purposively selected being that it is sited in the nerve centre of Lagos being Nigeria commercial centre with constant large number of patronizing guests who are mostly tourists from various countries across continents. Tourists were used as the taste panelists and a total number of 330 was used for the sensory evaluation. The Tourists (Panelists) were asked to rank the dishes on appearance, texture, taste, aroma and overall acceptability using a 9 – point hedonic scale as described by Ihekoronye and Ngoddy (1985).

9 – like extremely 8 – like very much 7 – like moderately, 6 – like slightly, 5 – neither or dislike, 4 – Dislike lightly, 3 – Dislike moderately 2 – dislike very much, 1 – dislike extremely.

## Statistical Analysis

The mean and standard deviations of the data were calculated using Analysis of variance (ANOVA) and correlation co-efficient according to Steel and Torrie (1980).

## Results and discussion

Table 1 shows the mean hedonic score of sensory qualities of indigenous dishes in the study areas. The mean score of appearance, texture, taste, aroma and overall acceptability were ranked as stated in the table 1. Ewuro egusi was rated highest ( $x = 7.22$ ) ( $x = 7.21$ ), ( $x = 7.53$ ), ( $x = 6.61$ ), ( $x = 7.39$ ) for appearance, texture, taste, aroma and overall acceptability respectively. This was followed by Ogbolo with fufu ( $x = 6.23$ ), ( $x = 6.20$ ), ( $x = 6.32$ ), ( $x = 5.83$ ) and ( $x = 6.63$ ). while bokonisa with cold eba was rated lowest with scores ( $x = 4.652$ ), ( $x = 4.50$ ), ( $x = 5.585$ ) ( $x = 4.11$ ) and ( $x = 4.64$ ).

Table 2 shows the correlation analysis of the contribution of the dishes appearance to the overall acceptability of the dishes. The result shows that the appearance of the dishes is positively related to the acceptability of the food ( $p < 0.01$ ) except for "Ogbolo" and "ewuro elegusi" with "eba" or "fufu" ( $r = 0.088$ ,  $p$  value = 0.019 and "ewuro elegusi" soup with "fufu" ( $r = 0.088$ ,  $p$  value = 0.0112). ( $r = 0.098$ ,  $p$  value = 0.076).

Table 3 shows the correlation analysis of the contribution of mean score of analysis texture of the dishes to overall acceptability of the dishes. The result shows that the texture of the dishes is positively related to the acceptability of the dishes at  $p < 0.01$  level of significance except for "Ogbolo" soup with "fufu". ( $r = 0.133$ ) ( $p = 0.015$ ) The texture of these three dishes was considered as indicated in the result as not significantly related to its overall acceptability.

Table 4 shows the correlation analysis of the contribution of the mean scores of the taste to overall acceptability of the indigenous dishes. The result shows that the taste of the dishes is positively related to the acceptability of the dishes ( $p < 0.01$ ) except for "ewuro elegusi" with "eba" or "lafun" ( $r = 0.055$ ,  $p$  value = 0.318).

Table 5 shows that aroma of the dishes is positively related to the overall acceptability of the dishes at  $p < 0.01$  level of significance except for "imoyo eleja" with "imoyo eba" ( $r = 0.029$ ,  $p$  value = 0.598) and "ewuro elegusi" with "eba" or "lafun" ( $r = 0.062$ ,  $p$  value = 0.258).

The tourist rating of the indigenous dishes was quite instructive and unpredictable. The appearance of some dishes those are not attractive as others may not attract people that are non-native of its

**Table 1: Mean Sensory Evaluation of Quality Attributes of Selected Indigenous dishes in all States (Ogun, and Lagos).**

| Dishes used for sensory study   | Mean (x)<br>Appearance | Mean (x)<br>Texture | Mean (x)<br>taste | Mean (x)<br>Aroma | Mean (x)<br>Overall<br>Acceptability |
|---|------------------------|---------------------|-------------------|-------------------|--------------------------------------|
| Bokonisa with cold eba  | 4.652                  | 4.500               | 5.585             | 4.115             | 4.642                                |
| Ebiripo with pepper sauce (cocoyam and pepper based)                  | 5.494                  | 5.485               | 5.600             | 5.176             | 5.782                                |
| efo yonri with amala isu (vegetable and maize based)                  | 5.745                  | 5.682               | 5.776             | 5.200             | 5.658                                |
| Opoporu with amala isu (beans soup and yam flour)                     | 5.085                  | 5.058               | 5.112             | 4.618             | 5.227                                |
| Ogbolo soup with fufu (drawing herbal root and cassava based)         | 6.227                  | 6.200               | 6.324             | 5.833             | 6.627                                |
| Imoyo eleja with imoyo eba (fish and cassava based)                   | 5.858                  | 5.785               | 6.170             | 5.258             | 5.991                                |
| Alapa akan with boiled rice (rice and crabs based)                    | 5.694                  | 5.570               | 5.812             | 5.230             | 6.112                                |
| Obe dudu with rice (green pepper, fish and rice based)                | 5.321                  | 5.567               | 5.612             | 5.076             | 5.915                                |
| Ewuro Egusi with eba or laafun (bitter leaves and cassava based)      | 7.221                  | 7.121               | 7.530             | 6.606             | 7.394                                |
| Gbure oloboro with eba/pounded yam (water leaves & cassava/yam based) | 6.706                  | 6.618               | 6.915             | 6.297             | 7.152                                |
| Ewa otili with pepper sauce   | 5.285                  | 5.242               | 5.242             | 4.748             | 5.345                                |

**Table 2: Correlation analysis of the contributions of the dishes appearance to the Overall Food Acceptability.**

| Dishes used in Appearance analysis                                      | Mean overall acceptability |     |         |         | Remarks  |
|---|----------------------------|-----|---------|---------|----------|
|   | Correlation coefficient    | n   | p-value | p-level |          |
| Bokonisa with cold eba  | 0.312**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ebiripo with pepper sauce (vegetable and maize based)                   | 0.355**                    | 330 | 0.000   | 0.01    | Sig.     |
| Efo yonri with cold pap (vegetable and maize based)                     | 0.444**                    | 330 | 0.000   | 0.01    | Sig.     |
| Opoporu with amala isu (beans soup and yam flour)                       | 0.389**                    | 330 | 0.000   | 0.01    | Sig.     |
| Imoyo eleja with eba imoyo eba (fish and cassava based)                 | 0.154**                    | 330 | 0.005   | 0.01    | Sig.     |
| Alapa akan with boiled rice ( rice ans crabs based)                     | 0.303**                    | 330 | 0.000   | 0.01    | Sig.     |
| Obe dudu with rice (green pepper, fish and rice based)                  | 0.366**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ewuro Egusi with eba or laafun (bitter leaves and cassava based)        | 0.098**                    | 330 | 0.076   | 0.01    | Not sig. |
| Gbure oloboro with eba or pounded yam (water leaves, and cassava based) | 0.200**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ewa otili with pepper sauce   | 0.413**                    | 330 | 0.000   | 0.01    | Sig.     |

Source: Field study, (2010)

**Table 3: Correlation analysis of the contributions of the dishes Texture to the Overall Food Acceptability**

| Dishes used in Texture analysis   | Mean overall acceptability |     |         |         | Remarks  |
|---|----------------------------|-----|---------|---------|----------|
|   | Correlation coefficient    | n   | p-value | p-level |          |
| Bokonisa with cold eba  | 0.269**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ebiripo with pepper sauce (vegetable and maize based)                   | 0.365**                    | 330 | 0.000   | 0.01    | Sig.     |
| Efo yonri with cold pap (vegetable and maize based)                     | 0.442**                    | 330 | 0.000   | 0.01    | Sig.     |
| Opoporu with amala isu (beans soup and yam flour)                       | 0.408**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ogbolo soup with fufu (drawing herbal root and cassava based)           | 0.088**                    | 330 | 0.109   | 0.01    | Not sig. |
| Imoyo eleja with eba imoyo eba (fish and cassava based)                 | 0.159**                    | 330 | 0.004   | 0.01    | Sig.     |
| Alapa akan with boiled rice ( rice ans crabs based)                     | 0.359**                    | 330 | 0.000   | 0.01    | Not sig  |
| Obe dudu with rice (green pepper, fish and rice based)                  | 0.441**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ewuro Egusi with eba or laafun (bitter leaves and cassava based)        | 0.102**                    | 330 | 0.063   | 0.01    | Not sig. |
| Gbure oloboro with eba or pounded yam (water leaves, and cassava based) | 0.196**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ewa otili with pepper sauce   | 0.439**                    | 330 | 0.000   | 0.01    | Sig.     |

**Table 4: Correlation analysis of the contributions of the dishes Aroma to the Overall Food Acceptability**

| Dishes used in Texture analysis   | Mean overall acceptability |     |         |         | Remarks  |
|---|----------------------------|-----|---------|---------|----------|
|   | Correlation coefficient    | n   | p-value | p-level |          |
| Bokonisa with cold eba  | 0.275**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ebiripo with pepper sauce (vegetable and maize based)                   | 0.403**                    | 330 | 0.000   | 0.01    | Sig.     |
| Efo yonri with cold pap (vegetable and maize based)                     | 0.454**                    | 330 | 0.000   | 0.01    | Sig.     |
| Opoporu with amala isu (beans soup and yam flour)                       | 0.364**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ogbolo soup with fufu (drawing herbal root and cassava based)           | 0.182**                    | 330 | 0.001   | 0.01    | sig.     |
| Imoyo eleja with eba imoyo eba (fish and cassava based)                 | 0.138**                    | 330 | 0.012   | 0.05    | Sig.     |
| Alapa akan with boiled rice ( rice ans crabs based)                     | 0.308**                    | 330 | 0.000   | 0.01    | Sig      |
| Obe dudu with rice (green pepper, fish and rice based)                  | 0.450**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ewuro Egusi with eba or laafun (bitter leaves and cassava based)        | 0.055**                    | 330 | 0.318   | 0.01    | Not sig. |
| Gbure oloboro with eba or pounded yam (water leaves, and cassava based) | 0.171**                    | 330 | 0.002   | 0.01    | Sig.     |
| Ewa otili with pepper sauce   | 0.414**                    | 330 | 0.000   | 0.01    | Sig.     |

Source: Field study, (2010)

**Table 5: Correlation analysis of the contributions of the dishes Taste to the Overall Food Acceptability**

| Dishes used in Texture analysis   | Mean overall acceptability |     |         |         |          |
|---|----------------------------|-----|---------|---------|----------|
|   | Correlation coefficient    | n   | p-value | p-level | Remarks  |
| Bokonisa with cold eba  | 0.206**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ebiripo with pepper sauce (vegetable and maize based)                   | 0.348**                    | 330 | 0.000   | 0.01    | Sig.     |
| Efo yonri with cold pap (vegetable and maize based)                     | 0.344**                    | 330 | 0.000   | 0.01    | Sig.     |
| Opoporu with amala isu (beans soup and yam flour)                       | 0.344**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ogbolo soup with fufu (drawing herbal root and cassava based)           | 0.133**                    | 330 | 0.015   | 0.05    | sig.     |
| Ikokore with cold eba (water yam and cassava based)                     | 0.141**                    | 330 | 0.010   | 0.05    | Sig.     |
| Imoyo eleja with eba imoyo eba (fish and cassava based)                 | 0.029**                    | 330 | 0.598   | 0.01    | Not sig. |
| Alapa akan with boiled rice ( rice ans crabs based)                     | 0.264**                    | 330 | 0.000   | 0.01    | Sig.     |
| Obe dudu with rice (green pepper, fish and rice based)                  | 0.358**                    | 330 | 0.000   | 0.01    | Sig.     |
| Ewuro Egusi with eba or laafun (bitter leaves and cassava based)        | 0.062**                    | 330 | 0.258   | 0.01    | Not sig. |
| Gbure oloboro with eba or pounded yam (water leaves, and cassava based) | 0.111**                    | 330 | 0.044   | 0.05    | Sig.     |
| Ewa otili with pepper sauce   | 0.346**                    | 330 | 0.000   | 0.01    | Sig.     |

Source: Field study, (2010)

consumption. Although, appearance of dishes has nothing to do with its nutritional composition it is an important factor in determining its acceptability for consumers. Hence a good dish should have attractive colour/appearance value for it to be desired. Iwe (2002) reported that people are sensitive to the colour and appearance of food they eat and will reject food that is not considered to have the accepted colour and that colour of food is extremely, important to our enjoyment of it. The highest and lowest means scores were observed in "ewuro egusi" and "Bokonisa" with cold "eba". Iwe (2002) reported that texture is a message we receive from th mouth which include chewiness and brittleness and these sensations add greatly to our enjoyment of food. The taste of all the dishes seems to be determined by the type of leafy vegetables used. Some of these vegetables generally changed the taste and aroma of such foods significantly especially the "ewuro" (bitter leaf) known to be bitter. Notwithstanding, taste factors is still much predominantly significant over other considerations as reported by Schafer (1998) that safety to be the most important factor in food choice.

The aroma of any dish is normally determined by sense of smell and so it renders itself to be at the mercy of first impression in the mind of the consumer. At times, aroma of a dish can give a lead into compositional constituents of the soup and if there is a trace of any ingredients desired by the consumer. At times, aroma of a dish can give a lead into compositional constituents of the soup and if there is a trace of any ingredients desired by the consumer. At times, aroma of any ingredients desired by the consumer to demand for such dish. Thus, Iwe (2002) reported that sense of smell is very sensitive, it can operate at a distance and the individual do not have to be close to the food before sensing the aroma.

### Conclusion and recommendation

The study showed that sensory qualities of the selected commonly consumed indigenous dishes assessed by tourists patronizing hotels, restaurants and tourists industry were effective. Most of the presented indigenous dishes were acceptable by tourists and they rated the dishes higher in terms of qualities attributes which consist of appearance, texture, taste, aroma and overall acceptability. Commercialization of these indigenous dishes may be an effective devise in promoting tourism sector in Nigeria.



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