



NIGERIAN INSTITUTE OF FOOD SCIENCE AND TECHNOLOGY

Proceedings of the

44Th NIFST

**CONFERENCE/ANNUAL
GENERAL MEETING 2020**

Theme:

**AGRO AND FOOD-PROCESSING
FOR WEALTH CREATION-THE
NIGERIAN EXPERIENCE**



DATE: WEDNESDAY, 14TH - THURSDAY, 15TH OCTOBER, 2020

**VENUE: D'PODIUM INTERNATIONAL EVENT CENTER,
318 AROMIRE AVENUE, IKEJA LAGOS**

Editors:

Okafor, G. I., Oluwole O. B., Alamu E. A., Okolie N. P., Alagbe E. E., Ojo T. I.,
Okafor J. N., Agu H.O., Okpala L. C., Nicholas-Okpara V. A. N., Ogunji A. & Shittu T. A.



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GENERAL INFORMATION ON NIFST

NIGERIAN INSTITUTE OF FOOD SCIENCE AND TECHNOLOGY

The Nigerian Institute of Food Science and Technology (**NIFST**) is a registered Non-Profit Making Body representing Food Professionals drawn from the Academia, Industry, Government and Research organisations in Nigeria. The Mission of the Institute is a reflection of the rich Human Resources of NIFST.

Established in 1976, **NIFST** membership has grown to well over 6,000 with ten active chapters—spread across all the geopolitical zones in Nigeria. NIFST membership also extends beyond the shores of Nigeria with members resident in the United States, United Kingdom, Canada, South Africa, Ghana etc.

The Profession of Food Science & Technology in Nigeria became chartered with the establishment of the Nigerian Council of Food Science & Technology (NCFST) Act Cap A2 LFN of 16th October 2019 signed into law by the President and Commander in Chief of the Federal Republic of Nigeria, President Muhammadu Buhari.

NIFST provides professional support to individuals, public & private institutions and the food industry, advances and promotes Food Science and Technology as a Profession cum Discipline which contributes to Nation building. Over forty Institutions of higher learning in Nigeria offer this discipline.

The National Secretariat of **NIFST** is situated in Lagos State of Nigeria. This secretariat also hosts the Secretariat of the West African Association of Food Scientists and Technologists, **WAAFoST**. **WAAFoST** is the regional affiliate of the International Union of Food Science and Technology (**IUFoST**).

Our Institute actively supports sustainable economic development of Nigeria, through development of its human capital resource and creation of a sound economic platform, particularly in the Food & Allied Industry. These programmes are achieved through such activities as inventions and innovations, Consultancy, Symposia, Seminar, Training Workshops, Lecture Series and Career Talks organized either solely or in partnership with other Government Agencies, Research Institutes or Professional Bodies.

Through the teachings and practice of Food Science and Technology, **NIFST** has contributed tremendously to the phenomenal interest in the study of Food Science and Technology as a course and the growth of the Food Industry in Nigeria. **NIFST** believes in partnerships through collaborations, consultations and cooperation and has signed a number of MOUs and intends to do more with public and private organizations to optimize its objective of adding value to the food business and knowledge.

To date, **NIFST** has organized 34 Annual General Meetings (**AGM**) & Conferences where members converge to brainstorm, discuss/proffer suggestions on thought-provoking issues related to the Profession, Food Processing and Food Security.

Another area of focus, by **NIFST**, is the biannual publication of the Nigerian Food Journal (**NIFOJ**). The Food Journal was first published in 1983 and has remained an annual publication of the Institute to date. The **NIFOJ** is rated among the top 3 scientific journals by the Elsevier Publishers, a leading publisher of scientific journals, in 2014. The publishing company also hosts the **NIFOJ** on its site. From inception to date, it continues to serve as Nigeria's only organ of information dissemination on current Food/ Food Related Research Findings.

Other publications, from the Institute, include:

- a) Academic brochures such as Proceedings of Conferences and Symposia, Seminar, Book of Abstracts of Research Findings
- b) Information brochures such as Monthly Newsletter and Quarterly Magazine - THE FOOD FORUM MAGAZINE- packaged to serve the Food Industry and the General Public at grass root level.

NIFST has achieved more than the critical minimum of Scientific and Technological know-how required for the successful provision of Wholesome Foods for Nigerians. The Institute also promote job creation, wealth generation and poverty alleviation through advanced training workshops to educate, encourage and empower Micro-, Small- and Medium- Scale Entrepreneurs.

GOVERNANCE

A Board of Trustees and Governing Council pilot the affairs of the Institute. The Governing Council is made up of Principal Officers elected at **AGM**, Chapter Chairmen and Committee Chairmen constituted for specific assignments. The Corporate Affairs, Scientific & Training and Student Affairs Committees are coordinated by the 1st Vice President,

2nd Vice President and Assistant National Secretary respectively.

Members

The categories or type of membership (i) Student member; (ii) Licentiate member; (iii) Professional member; (iv) Honorary member; (v) Fellow (vi) Honorary fellow (vii) Corporate member.

The requirements for admission to the above categories or grades of membership are as follows:

i) Student Member:

He shall be a person not under 16 years of age, enrolled in a recognized course of study in Food Science or Food Technology at the time of application, and shall satisfy the conditions laid down by the Governing Council.

ii) Licentiate: He shall be a person who has either:

- (a) National Diploma in Food Science and Technology
- (b) Graduates from other related fields of study with relevant experience in Food Science and Technology (or food processing) and
- (c) has satisfied all Council requirements, by virtue of his experience in the field of Food Science and Technology and in view of the responsibility of his employment and by any additional evidence acceptable to the Council, that he is a suitable person to be admitted.

iii) Professional Member:

- (a) He shall be a person who has HND, B.Sc. or B. Tech. Degree in Food Science & Technology or Food Science or Food Technology.
OR
- (b) OND in Food Science & Technology, Food Science or Food Technology and who must have been admitted into Licentiate membership for at least one year, has applied for membership upgrade provided he/she has a minimum of 5 years relevant experience in a unit/department of an organization/institution in which scientific post-harvest food issues/business are processed/regulated/taught/researched as regular work.
OR
- (c) Any of HND or B.Sc. or B. Tech. or B. Eng. or MBBS in Food Science and Nutrition, Brewing Science and Technology, Food Engineering, Food Science and Microbiology, Chemistry, Industrial/Applied Chemistry, Nutrition, Chemical Engineering, Science Laboratory Technology, Biochemistry, Microbiology, Industrial/Applied Microbiology, Animal Science and Medicine who must have been admitted into Licentiate membership for at least one year and has applied for membership upgrade provided he/she has a minimum of 5 years relevant experience in a unit/department of an organization/institution in which scientific post-harvest food issues/business are processed/regulated/taught/researched as regular work.
OR
- (d) A Post Graduate Diploma (PGD) in Food Science & Technology plus HND or B.Sc. or B. Tech. or B. Eng. or MBBS in Food Science and Nutrition, Brewing Science and Technology, Food Engineering, Food Science and Microbiology, Chemistry, Industrial/Applied Chemistry, Nutrition, Chemical Engineering, Biochemistry, Microbiology, Industrial/Applied Microbiology, Animal Science, Agric. Engineering, Mechanical Engineering, Science Laboratory Technology and Medicine

iv) Honorary Member:

He shall be a person who has HND or B.Sc degree plus 5 years (minimum) of association with food production & the Institute.

v) Fellow:

He shall be a person not under 35 years of age who has fifteen years of NIFST membership with substantial evidence of contribution and active participation. Qualifying members apply to the Council stating biodata / qualification. The submitted evidence is scrutinized by the elected Fellows and admissions are ratified by Council before investiture.

vi) Honorary Fellow:

The title may be conferred by the Institute on an individual with more than 20 yrs of association with the food industry and the institute or an outstanding national immense benefit in the Food Industry or to the institute.

vii) Corporate Membership:

Corporate Membership, of NIFST, may be conferred by Council upon an Industry, a Company, an Institute or any otherwise legally organized body which is judged to have made significant contributions in promoting one or more of the stated objectives of the Institute.

EDITORIAL COMMENT

Distinguished NIFSTers! Permit me to present the Proceeding of the 44th Conference and Annual General meeting of the Nigerian Institute of Food Science and Technology (NIFST) with the theme “Agro and Food -Processing for Wealth Creation - The Nigerian Experience”. The conference holding in the megacity Lagos has been tagged “The Summit”.

The summit of challenges, relative to the theme have been well articulated from different angles and solutions proffered, by diverse experts who contributed their research breakthroughs, technologies and innovations to the Book of Extended Abstract. It is anticipated that the presentations during the Technical sessions will promote industrialization, food safety, processing and packaging of agricultural produce for local consumption, export and job creation amongst others.

The Covid 19 pandemic left its fingerprints on the expected number of submitted extended abstracts, whereas we had over 220 abstracts by end of August 2019, we had less than 150 this year, with 2/3 of the submissions coming at the end of August. This development, made us to enlarge the Editorial Team members, who helped to render needed services in editing the 150 abstracts received from scholars within and outside Nigeria, within a record time. The few extended abstracts omitted in the 43rd edition were integrated into this edition. The accepted abstracts were classified according to specific areas in Food Science and Technology discipline, for enhanced value to members during presentation at the Technical sessions. Authors have been assigned poster or oral presentation at the conference and should note that the stipulated forms of presentation, does not in any way make the content inferior to the other.

The challenges of Covid 19 Pandemic, late hour submission and delayed return of corrected abstracts by authors forced us to migrate from the traditional Paper to the e-version of the Conference Proceeding, which has the twin benefits of enhancing its visibility globally and accessibility. We appreciate the authors for their contributions without which this 44th edition would not have been possible.

I wish to commend the Volunteer Editorial Assistant - Mr. Akinyele Ogunji - for his devotion and commitment. My profound gratitude goes to the Editorial Sub-committee members and NIFST Secretariat staff, for their collective efforts that facilitated the execution of this task. Finally, I appreciate the Council members and entire NIFST family for the reposed trust.



Professor Gabriel Ifeanyi Okafor, FNIFST
Deputy Editor-in-Chief, Nigerian Food Journal



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ABST-109 (O) Profiling the sensory attributes and acceptability of canned ogbono soup

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EFFECT OF DRYING METHOD ON THE FUNCTIONAL PROPERTIES OF SOME LOCAL SPICES

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Introduction

Spices are a large group of natural ingredients such as dried seeds, fruits, roots, rhizomes, barks, leaves, flowers and other vegetative substances used in a very small quantity as food additives either as colour, aroma, flavour or preservative [1]. They are mainly used to improve the palatability/taste and the visual appearance of diets. Most Spices contain phenolic compounds that are responsible for their medicinal, antioxidant and preservative properties [2]. The three spices studied include ginger leaf, curry leaf and scent leaf dried using traditional sundried method and oven dried method. The objective of this study is to determine the functional properties of the selected spices.

Materials and Method

The spices (ginger, curry and scent leaves) were purchased from a local market in Minna, Niger State. The spices were sundried 5 h daily for 2 consecutive days and turned over at 1 h interval to achieve uniform drying. After sun drying, the sample was milled to powder form. The second sample was oven dried at a temperature of 50°C for 5 h and turned over periodically to aid uniform drying and milled to powder form. The results obtained from analysis of the functional properties were subjected to one-way ANOVA and the means were separated by Duncan Multiple Range Test using SPSS version 20.

Results and Discussion

The result of functional properties of the spices is shown in Table 1. The bulk density was in the range of 0.27 to 0.44 g/g. There was no significant difference ($p < 0.05$) in the bulk density of the samples except ginger that shows a variation between the sun dried and oven dried sample. Water absorption capacity ranged from 2.05 to 3.95 g/g. There was significant difference ($p < 0.05$) in the of the ginger and scent leaf except for curry leaf that shows no significant difference between the oven dried and the sundried sample. Oil absorption capacity ranged from 2.45 to 3.95 g/g. There was no significant difference ($p < 0.05$) in the values across the sample. Emulsion capacity was in the range of 46.56 to 55.47 %. No significant difference ($p < 0.05$) observed in the emulsion capacity of the samples. Drying of spices can be done with different method, natural and hot air drying method is widely used [3]. The slight difference recorded between the bulk density of oven dried and sun dried sample could be attributed to variation in drying process. Bulk density is an important functional property that has an implication in packaging and transportation of food materials. Lower bulk density of a given product exhibit better packaging properties than product with high bulk density [4]. The significant difference observed in the water absorption capacity of the samples is in line with the findings of Diaz-Maroto [5] who reported changes in the physical, chemical and nutritional properties of spices during drying. Water absorption capacity is the ability of a food material to absorb water [6]. Oil absorption capacity of a product helps the product to retain flavour and improve mouth feel [6]. Some differences observed in the functional properties of the spices show that method of drying affects the functionality of the spices in the food system.

Table 1: Functional properties of the spices

Samples	BD (g/ml)	WAC (g/g)	OAC (g/g)	EC (%)
Scent leaf SD	0.31 ^{cd} ± 0.00	3.95 ^a ± 0.07	3.50 ^{ab} ± 0.00	51.02 ^{ab} ± 0.47
Scent leaf OD	0.32 ^c ± 0.01	3.50 ^b ± 0.00	3.55 ^a ± 0.07	50.00 ^{ab} ± 0.00
Ginger SD	0.44 ^a ± 0.01	2.05 ^e ± 0.07	2.60 ^c ± 0.14	50.00 ^{ab} ± 0.00
Ginger OD	0.37 ^b ± 0.00	2.55 ^d ± 0.07	2.45 ^d ± 0.07	55.47 ^a ± 1.10
Curry leaf SD	0.30 ^d ± 0.00	2.90 ^c ± 0.14	3.60 ^a ± 0.00	46.56 ^c ± 0.58
Curry leaf OD	0.27 ^d ± 0.03	3.00 ^c ± 0.00	3.50 ^{ab} ± 0.00	47.59 ^c ± 0.42

Values are means ± standard deviation of duplicate determination. Values in the same column with different superscript are significantly different ($p \leq 0.05$).

SD=Sundried; OD= Oven dried

Conclusion

Sun drying and oven drying methods are effective in the processing of spices and also affect the functionality of the spices in food system. However, oven dried samples were found to exhibit better functional properties in most of the parameters investigated. Therefore, the use of oven drying method in the drying of spices is hereby recommended due to its control temperature of drying and also reduce incidence of contamination of the spices when exposed to open environment for sun drying.

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