Mrs. Amraibure Odia, Ph.D. (Ekpoma)

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Faculty: Physical Sciences
Department: Chemistry

1. Biography/Background

Odia, Amraibure hails from Jesse town, Ethiope West, Local Government Area of Delta State, Nigeria. She is an Associate Professor in the Department of Chemistry, Faculty of Physical Sciences, Ambrose Alli University, Ekpoma Nigeria. Dr. Mrs. Amraibure Odia research interests span over 16 years in independent and collaborative research in Chemistry.

2. Area of Expertise

a. Organic Chemistry (Natural Products, Heterocyclic, and Food Chemistry)
b. Cosmetic Chemistry

Some responsibilities held include Departmental Postgraduate Coordinator, Departmental Examination Officer and Hall warden (Iyayi Female Hostel).Dr. Mrs. Amraibure Odia joined the services of this University on the 21st of December, 2001 as an Assistant lecturer. She contributes to the peer-reviewed publications such as ChemTech Journal, Nigerian Annals of Sciences and Aziza Journal of Science and Technology.

3. Qualifications

a. Ph.D (Organic Chemistry), Ambrose Alli University, Ekpoma. (2009)
b. Master of Science (Chemistry), Ambrose Alli University, Ekpoma. (2001)
c. Bachelor of Science (Chemistry), Honors, Edo State University, Ekpoma. (1992)

4. Research Focus

a. Quantitative Assessment/Evaluation of Bioactive Constituents, and antioxidant activity of some Botanicals.
b. Production of different surfactants from some waste materials.

5. Professional Affiliation:

a. Member, Chemical Society of Nigeria (CSN)
b. Member, Institute of Chartered Chemist of Nigeria (ICCON)
c. Member, American Chemical Society (ACS)
d. Member, International Union of Pure and Applied Chemistry (IUPAC)
e. Member, Chemistry Advancement Society (CAS), Chemistry Department, Ambrose Alli University, Ekpoma.

6. Social/Community Engagements

a. Financial Secretary/Treasurer, UkokoŔeEguono Social Club, Ekpoma.

7. Publications

a. Book Authored

i. **Amraibure Odia** (2016). Understanding Nomenclature in Organic Chemistry. Nigeria: Freshvine Prints. ISBN: 978-978-955-590-1.

b. Book Chapters

i. **Amraibure Odia** and Oaikhena Zekeri Esezobor(2017).Therapeutic Uses of AminoAcids: Amino Acid – New Insights and Roles in Plant and Animal. *Edited by Toshiki Asao and Md. Asaduzzaman, ISBN 978-953-51-3242-4, p.3-14, InTech, www.intechopen.com,* (Croatia).

ii. Odia, A. (2017). Benzene and Aromaticity. In: University Chemistry, Module II, Volume II. *Edited by Egharevba, F; Asia, I.O. and Osuide, M. O.Freshvine Prints. ISBN: 978-978-50029-8-2.p. 2-27*

iii. **Odia, A.** (2017).Carboxylic Acid Derivatives. In: University Chemistry, Module II, Volume II. *Edited by Egharevba, F; Asia, I.O. and Osuide, M. O.Freshvine Prints. ISBN: 978-978-50029-8-2.p. 71-92.*

iv. **Odia, A.** (2017). Nitrogen-Containing Organic Compounds. In: University Chemistry, Module II, Volume II. *Edited by Egharevba, F; Asia, I.O. and Osuide, M. O.Freshvine Prints. ISBN: 978-978-50029-8-2.p. 93-102.*

8. Journal Publications

i. Odia, O. Osadolor and**Odia, Amraibure**(2017). Mitigating bush fire through the management of forest productivity. *Sau- Sci- Tech. Journal Volume **2 (1)***, 77-84.

ii. Jatto, E. O. Asia, I. O. Egharevba, F. and **Odia,A**. (2017). Thermodynamic studies of Treatment of Wastewater from Food Industry. *Sau- Sci- Tech. Journal Volume **2 (1)***, 69-76.

iii. **Odia, A.** and Eguavoen, O. I. (2016). Effects of thermal and sprouting processing techniques on the amino acid content of pigeon pea *(Cajanuscajan). Mambilla: Journal of Sciences and the Environment.* **3(1),** 113-118

iv. **Odia, A.,** Esezobor, Z.O. and Egharevba, F. (2016). Synthesis of stearyl alcohol from saturated cocoa butter. *Aziza Journal of Science and Technology,* **1(1),**77 – 83.

v. **Odia, A.** and Omoikhoje, B.J. (2016). Antioxidant Capacity of *Moringa oleifera* Plant. *Annals of Sciences,* **15(1):** 149 – 154.

vi. **Odia, A.**, Ihimire, I.G. and Okoebor, E.S. (2014). Antioxidant Activities of the Leaves of some Medicinal Plants. *ChemTech Journal,* **9:**1 – 15.

vii. Jatto, O.E., Ewansina, I.O., Asia, I.O. and **Odia, A.** (2013). Kinetic Studies of Wastewater Treatment from Rubber Factory Using Snail Shell. *New York Science Journal,* **6(2):**25 – 33 **(Foreign)**.

viii. Osuide, M.O., Ighalo, C., Odogun, O., **Odia, A.** and Enetiabor, C. (2012). Comparative Study of Cow, Goat and Donkey Meat. *ChemTech Journal,* **8:**114 – 118.

ix. Osadolor, Odia O. and **Amraibure, Odia** (2012). Evaporative Cooling Applied to Air Conditioning. *ChemTech Journal,* **8:**119 – 128.

x. **Odia, A.,** Ihimire, I.G., Azih, M.C., and Okonigene, G. (2012). Physico-Chemical Comparison of Wheat and Composite Cassava Soybeans Flour Baked Bread. *Annals of Sciences,* **12(1):** 15 – 20.

xi. Chukwuedo, M.E.,Azih, M.C., **Odia, A.,** Jatto, E.O. and Ihimire, I.G.(2011).Physicochemical Characteristics and Functional Properties of Breads made from Sweet and Irish Potato–Cassava Flour Blends. *IRCAB Journal of Natural and Applied Sciences,* **01(01):** 80 – 84 **(Foreign)**.

xii. **Odia, A.,** Azih, M.C., Eguavoen, I.O., Onimawo, I.A. and Ihimire, I.G. (2011).Effect of Processing on some Anti-nutritional Constituents of Pigeon Pea *(Cajanuscajan).IRCAB Journal of Natural and Applied Sciences,* **01(01):** 118 – 124 **(Foreign)**.

xiii. Azih, M.C., **Odia, A.,** Ihimire, I.G., Bamuza-Pemu, E.E. and Chukwuedo, M.E. (2011). Effect of Different Ripening Conditions on Proximate Composition of Plantain(*Musa sapientum). ChemTech Journal,* **11:** 165 – 170.

xiv. **Odia, A.,**Eguavoen, I. O., Ihimire, I. G., Onimawo, I.A. and Chukwuedo, M. E. (2010).*In-Vitro* Digestibility of Nutrients/Anti-Nutrients in Some Raw and Sprouted Pigeon Pea *(Cajanuscajan)* obtained from Some Markets in Esan land, Edo State Nigeria. *Adv. Nat. & Appl. Sci. Res.,* **8:**217 – 225.

xv. **Odia, A.,**Eguavoen, I. O., Onimawo, I.A. and Ihimire, I. G. (2010). Effect of Sprouting and other Processing Methods on the Nutrient Content and *In-vitro* Digestibility of Hybrid Cultivars of Pigeon Pea *(Cajanuscajan). Adv. Nat. & Appl. Sci. Res.,* **8:**245 – 252.

xvi. Asia, I.O., Ndubuisi, O.L. and **Odia, A.** (2009). Studies on the Pollution Potentials of Wastewater from Textile Processing Factories in Kaduna, Nigeria. *Journal of Toxicology and Environmental Health Sciences,* **1(2):**034 – 037 **(Foreign).**

xvii. Chukwuedo, M.E. and **Odia, A.** (2008). Proximate Analysis of three Popular Local Varieties of Rice. *Journal Chem. Soc. Nigeria,* **33(2):**157 – 161.

xviii. **Odia, A.,** Ihimire, I. G. and Jatto, E. O. (2007). Formulation and Characterisation of Weanling Meal based on Cassava Flour, Cassava Starch and Soya Beans Flour. *Adv. Nat. & Appl. Sci. Res.,* **5:**90 – 94.

xix. **Odia, A.** and Akinyemi, O.A. (2007). Comparative Assessment of Nicotine Content in some Cigarettes (Tobacco). *Adv. Nat. & Appl. Sci. Res.,* **5:**95 – 100.

xx. Asia, I.O., Akinlabi, A.K., **Odia, A. E.,**Amayo, K. and Ennesi Mercy, (2007). Comparative Studies of *Heveabrasiliensis latex* and *funtumiaelastica latex. International Journal of Chemistry, India*, 17(3), 189-196.

xxi. Osuide, M.O, **Odia, A.E.,** Omofuaire, B., Etaghene, B. and Omoregbee, M. (2005). Proximate Analysis of some Mineral Elements in the Eggs of Common Birds. *ChemTech Journal,* 1:156 – 159.

xxii. **Odia, A.E.,** Onimawo, I.A. and Eguavoen, I.O. (2004)**.** Effects of Chemical Modifications on the Nutrient Content and Functional Properties of *Pleurotustuberregium.Nigeria Journal of Nutritional Sciences,* **25(2):**13 – 16.

xxiii. Ihimire, I.G., **Odia, A.E.** and EguavoenI.O., (2003). Studies on Polyphenol Content in Malted Cowpea (*Vigna unguiculata*). *Nigerian Journal of Nutritional Sciences,* **34(1):**35 – 37.

xxiv. **Odia, A. E.,** Eguavoen, I.O. and Onimawo, I.A. (2001). Nutrient Composition and Functional Properties of *Plurotustuberregium. African Journal of Science,* **2:**344 – 355.

9. Conferences Attended

i. **Odia, A.** andMensah, J.K. (2017).Ethobotanical study and preliminary phytochemical screening of some local medicinal plants in Edo State I. 1st International Conference of the National Association of Women Academics (NAWACS) A.A.U. Ekpoma. Chapter. 2-5 May, 2017. NAS 15:31

ii. **Odia, A.,** Ihimire, I.G. and Okoebor, E. S (2014). Antioxidant Activities of the leaves of some medicinal Plants. Chemical Society of Nigeria. (7th Annual ChemTech Conference), Edo State Chapter, 31stJuly, 2014. PN 07: 7

iii. **Odia, A.** and Osayi, E. F. (2014). Effect of Processing (Sprouting and Autoclaving) on the Flatulence Factor of some Legumes. Chemical Society of Nigeria. (7th Annual ChemTech Conference), Edo State Chapter, 31stJuly, 2014. PN 12: 8

iv. **Odia, A.** (2013). Effect of Processing on the Amino Acid content of Pigeon pea. 245th American Chemical Society National Meeting and Exposition, New Orleans, Louisiana. U. S. A. April 7-11, 2013. Book of Abstract. TECH-215.

v. Chukwuedo, M.E.,Azih, M.C., **Odia, A.,** Jatto, E.O. and Ihimire, I.G. (2011).Physicochemical Characteristics and Functional Properties of Breads made from Sweet and Irish Potato–Cassava Flour Blends. *IRCAB Journal of Natural and Applied Sciences,* **01(01):** 80 – 84.

vi. **Odia, A.,** Azih, M.C., Eguavoen, I.O., Onimawo, I.A. and Ihimire, I.G. (2011).Effect of Processing on some Anti-nutritional Constituents of Pigeon Pea *(Cajanuscajan).IRCAB Journal of Natural and Applied Sciences,* **01(01):** 118 – 124.

vii. TechConnect World Innovation Conference Nanotech 2018 Conference &Expo. May 13-16, 2018. Anaheim, Los Angeles. California. USA.

Therapeutic Uses of Amino Acids

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InTech Open 2017, *www.intechopen.com*, (Croatia).

Abstract
Amino acids, which are the building blocks of peptides and proteins, are indispensablechemicals needed by the body for optimal metabolism and proper body functioning.Classified as essential, nonessential and conditionally essential, amino acids play vitalroles in the body such as in protein synthesis and as precursors in the production ofsecondary metabolism molecules. Amino acid oxygenases also play vital metabolic rolessuch as in prevention of diseases; as a result, amino acids and their oxygenases isolatedfrom various organisms are potent candidates in treatment of diseases which includecancers, inflammations, as well as antibacterial agents.

Keywords: Amino acids, oxygenase, therapeutic, bacteria, flavoprotein, enzyme.

Mitigating Bush Fire through the Management of Forest Productivity

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SAU Sci-Tech. J., 2017, 2 (1), www.journals.sau.edu.ng, ISSN: 2536-6866

Abstract
Bush fires, their causes and effects were examined. The availability of the fuel material (biomass), one of the necessary components for the initiation and sustenance of wild bushfires was studied. Investigation shows that the turnover rate is positive across the country. Over 400g in the forest zone to about 26g in the savanna zone. This means that wild bush fires can be expected in any part of the country. The dry matter and litter accumulation are also sufficient to initiate and sustain bushfires–ranging from $700g/m^2$ to $60g/m^2$ and $287g/m^2$ to $116g/m^2$,respectively, in Ekpoma. The level of dry material was expectedly higher during the dry season – particularly in December, January and February. Bush fires at this time are often very rampant, furious and dangerous, as the dry harmattan wind aids them to move at very high speed. Thus, controlling the availability of the biomass can substantially help to mitigate wild bushfiresinitiation, severity and frequency.

Keywords: Bushfires, biomass, forest, savannahs, fuel, frequency.

Thermodynamic Studies of Treatment of Wastewater from Industry using Powdered Snail Shell (PSS)

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SAU Sci-Tech. J., 2017, 2 (1), www.journals.sau.edu.ng, ISSN: 2536-6866

Abstract
The thermodynamic studies of the treatment of wastewater from a food industry using powdered snail shell was done at different temperatures. The change in standard Gibb's free energy (ΔG^o) of pH has values of –0.109, –0.263, –0.147, and –0.064 kJ/mol respectively, while the change in standard entropy (ΔS^o) and enthalpy (ΔH^o) have values of 0.80 and –279.9 kJ/mol respectively. The ΔG^o values of alkalinity were –0.359, –0.355, –0.354, –0.344 and –0.347kJ/mol respectively, while its standard entropy and enthalpy values were –0.27 and –26.4 kJ/mol respectively. Turbidity has ΔG^o values of –0.405, –0.338, –0.322, –0.161 and –0.145 kJ/mol while its ΔS^o and ΔH^o values were 1.68and –599.6kJ/mol. The values of ΔG^o of electrical conductivity were –0.415, –0.587, –0.671, –0.263 and –0.240kJ/mol while its ΔS^o and ΔH^o values were 1.50 and –591.5kJ/mol respectively. ΔG^o, ΔS^o and ΔH^o values of TS, TSS, TDS, BOD5, COD, DO, NO_3–N, phosphate, sulphate and lead were also determined. However, cadmium could not be computed because it was below the detectable limit. The thermodynamic studies were done at 283K, 292K, 303K, 313K and 333K respectively. Physicochemical characterisation of the wastewater was determined before and after treatment. Also, the food and mineral composition of four different species of snail shell were determined, the pH, surface area and optimum dosage of the powdered snail shell were determined, from the analysis, the giant African snail shell was chosen and used for the treatment of the wastewater, due to its large surface area, stability at pH of 4 – 12 and the ease to produce a fine powder when homogenised.

Synthesis of Stearyl Alcohol from Saturated Cocoa Butter

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Aziza Journal of Science and Technology Vol. 1 No. 1 July, 2016.

Abstract
This study is aimed at the synthesis of stearyl alcohol via the reduction of stearic acid, which is the most abundant saturated fatty acid in cocoa butter. Cocoa butter was extracted from cocoa seeds using a mechanical press and carefully fractionated to separate the saturated and unsaturated portions of the butter. The sample was methylated and the product reduced to fatty alcohol using lithium aluminium hydride ($LiAlH_4$). The melting point, refractive index and Fourier transform infrared (FT–IR) results of the product revealed the presence of stearyl alcohol in a higher proportion. Fractionated fatty alcohols are commercially useful as secondary renewable fuels as they are suggested to have remarkable resistance to auto-oxidation.

Keywords: Cocoa, fatty alcohols, stearyl alcohol, lithium aluminium hydride

Antioxidant Capacity of Moringa Oleifera Plant

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Nigerian Annals of Natural Sciences, Volume 15(1) 2015 (pp. 149 – 154), ISSN: 1115-2702,www.nansjournal.org.

Abstract
The leaves, stem, root and seeds of *Moringa oleifera* plant were collected, washed free of debris (especially sand) with deionized water before sun drying to constant weight and extracted separately by percolation using methanol. The extracts were concentrated using a rotary evaporator and the phytochemical constituents – phenol and flavonoids, and antioxidant activity – DPPH free radical scavenging and reducing power of the extracts were assessed. Statistically significant ($P < 0.05$) difference in the levels of analytes from the respective extracts of the plant parts was recorded using Tukey-Kramer Multiple Comparison Test. The leaf extract contained the highest total phenolics (68.98±0.42 µg/g) and flavonoids (20.19±0.06 µg/g). The least Phenolic content (28.98±0.42 µg/g) was recorded for the seed extracts, while the least flavonoids content (4.26±0.06 µg/g) was recorded in the root extract. The root extract recorded the highest DPPH free radical scavenging activity (49.55±0.34 %) greater than 45.63±0.45% observed in comparable concentration of vitamin C solution that was used as standard. The study showed that the extracts possess good phytochemical and antioxidant capacities responsible for their use in management of disease conditions like inflammations, tumors and ulcers.

Keywords: Moringa oleifera, antioxidant, phytochemical, spectrophotometer, herbal.
Abbreviation: DPPH-1,1-Diphenyl-2-picrylhydrazyl radical.

Antioxidant Activities of the Leaves of Some Medicinal Plant

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ChemTech Journal 2014, Vol. 9 pp 1 – 15, ISSN: 0794-8417

Abstract
Methanolic extracts (5g/20ml) of the herbal leaves – *Ocimumgratissimum, Ipomoea batatas, Spinacia oleracea, Hibiscusnrosa-sinesis and Jatropha curcas* were made, filtered, concentrated with Soxhlet extractor and dissolved in dimethylsulphoxide, DMSO (250µg/ml). The total Phenolic, total flavonoids, phylate content, reducing power and DPPH scavenging activities of these extract were evaluated to assess the antioxidant properties of the plants. Tukey-Kramer multiple comparisons were used to compare mean levels of triplicate assessment of the respective analyte. Also, one-way analysis of variance was applied, and Pearson product moment correlation for scavenging activity and total Phenolic or flavonoids content was done for the

results of respective extract. DPPH scavenging activity observed with extract of respective samples studies were higher than observed with solutions of vitamin C used as standard, 67.48%. The level of DPPH scavenging activity in the extract of the respective sample were not significantly ($p > 0.05$) different. Findings from this study suggests that usage of these leaves will be of benefit to health especially as DPPH scavenging activity level of the respective extracts studied were higher than values obtained from solution of vitamin C of comparable concentration.

Keywords: Antioxidant, medicinal plant, dpph, phenolics, flavonoid, phytate

Kinetic Studies of Wastewater Treatment from Rubber Factory usingSnail Shell

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New York Science Journal(2013), 6(2), 25 – 33, http://www.sciencepub.net/newyork.

Abstract
The kinetics studies of the treatment of wastewater from rubber industry, shows that the treatment fit thepseudo-second order kinetic model, as compared to the other two kinetic models (Pseudo-first order orLagergrien kinetic and intraparticle diffusions model) studied, since the correlation coefficient (R^2) values ofmost parameters were ≥ 0.99. Moreover, the food composition (Nitrogen free extract, protein, fibre, fat andash content), the mineral compositions(Fe, Mn, Zn and Cu) as well as the surface area and pH were analysedfor the four species of snail shell (*Archatinaarchatia, Archtinamarginata, Achatinafulica* and limucullariaspecies). Inaddition, the physicochemical properties (pH, temperature, alkalinity, turbidity, total solids,suspended solids, dissolved solids, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand,electrical conductivity, and phosphate, Nitrate-Nitrogen, Sulphate, Pb, Cd and Hg) were analysed forwastewater from rubber industry. The data derived from the physicochemical properties were treated withthree kinetic models (Pseudo-first order-Lagergrien, Psuedo-second order and intraparticle diffusion). Fromthe kinetic models, the results show that for the wastewater from the rubber industry, the correlationcoefficient (R^2) of the pseudo-second order was approximately 1, indicating that the treatment fit the pseudo-secondorder kinetics.

Keywords: Rubber, snail shell, kinetics, pseudo-second order.

Comparative Study of Cow, Goat and Donkey Meat

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ChemTech Journal 2012, Vol. 8 pp 114 – 118, ISSN: 0794–8417.

Abstract
Samples of commonly consumed meat in Nigeria – Goat and Cow meat were compared with uncommonly consumed donkey meat, using criteria of carbohydrate, protein, lipid and creatinine content. Carbohydrate was found to be greater in cow meat (36.67±6.24%) than donkey meat (34.09±4.32%) and goat meat (24±4.32%). Proximate analysis of protein shows that goat meat (37.42±6.60%) was more proteinous than cow meat (28.00±1.63%) and donkey meat (29.33±0.51%). Lipid levels were higher in cow meat (26.83±0.29%) than donkey (22.45±4.5%) and goat meat (24.31±0.364%). Creatinine, muscle excretion product, was least in donkey meat (5.88±0.40%) as against other meat. Moisture was at par, about 76%, for the three meat types. Donkey meat was found favourably comparable, in nutrient content with commonly consumed meat.

Keywords: Creatinine content, carbohydrate, protein, lipid

Physico-chemical Comparison of Wheat and Composite Cassava Soybeans Flour Baked Bread

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Nigerian Annals of Natural Sciences, Volume 11(2) 2012 (pp 015 - 020)

Abstract
Pulverised cassava tuber dehydrocyanated by boiling in 3% HCl for 30 minutes was blended with defatted pulverized soyabean to produce a composite flour. Some physico-chemical characteristics of bread baked with this flour were found comparable with those of wheat flour baked bread under similar conditions. The emulsion capacity of the composite flour bread, (11.72±0.29%) was significantly ($p<0.05$) different from that of the wheat flour bread, (9.52±0.00%). The differences recorded in water/oil absorption and foam stability were insignificant. These differences could influence consumer preferences with respect to the composite flour product.
Keywords: Cassava flour, soybean flour, physic-chemical, baked bread

Evaporative Cooling Applied to Air-Conditioning

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ChemTech Journal 2012, Vol. 8 pp 119 – 128, ISSN: 0794-8417

Abstract
Evaporative cooling can give some relief by removing sensible heat from the room without using compressors, condensers or a throttle valve. That is, it is achieved through the adiabatic saturation of air. It is a process commonly used when the outdoor condition is very dry. The system that was built and tested consists essentially of an upper and lower reservoir tanks, tubing or pipes, air inlet and out let ducts, air cleaning device and a propeller fan with a 9.993kg mass of NaCl salt dissolved in 50 liters of water to give a saturated brine solution which is the refrigerant. The temperature before and after dissolution was taken, and a difference of 3 ^{o}C was observed while a further temperature drop of 4 ^{o}C was achieved during experimentation with a coefficient of performance (COP) of 3.5.

Keywords: Evaporative cooling, refrigeration, brine, temperature.

Effect of Different Ripening Conditions on Proximate Composition of Plantain (*Musa sapientum)*

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ChemTech Journal, 2011, Vol. 7, pp 1165 – 170; ISSN: 0794-8417

Abstract
Matured unripe plantain *(Musa sapientum)* was purchased from a peasant farmer in Ekpoma, Edo State, Nigeria. Ripening at different conditions- exposed at room temperature; bagged in presence of carbide; bagged in presence of wood ash; and bagged in black polyethylene respectively. Subsequently, proximate composition of the respectively ripe-products were assessed. Significantly ($p<0.05$) low protein content of 2.65±0.03% was observed with sample bagged in presence of carbide. Each of the other samples recorded significantly ($p<0.05$) greater protein content than observed in the raw sample, 14.40±0.01%. Raw sample, sample bagged in presence of carbide and sample bagged in presence of wooden ash recorded comparable lipid content. Insignificant ($p>0.05$) difference was observed in the ash content of the respectively ripen samples. All ripened samples recorded significantly ($p<0.05$) more moisture or carbohydrate content compared to as observed in the raw sample. The result suggests that ripening enhanced nutritional content of plantain, but induction of ripening with carbide is deleterious.

Keywords: Plantain, ripening, proximate, *Musa acuminate* (AA), *Musa balbisiana* (BB).

In-vitro Digestibility of Nutrients/Anti-Nutrients in some Raw and Sprouted Pigeon Pea *(Cajanuscajan)* obtained from some Markets in Esanland, Edo State Nigeria

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Adv. Nat. & Appl. Sci. Res. Vol. 8 2010 pp 217 – 225; The official Journal of the Chemistry Advancement Society Printed in Nigeria; ISSN-1597 0299 Available Online @ www.casjournal.org.

Abstract
A comparative study was conducted to determine the level of some nutrients, anti-nutrients and *in-vitro* digestibility in raw and sprouted pigeon pea available in Ekpoma, Irrua and Uromi markets. Edo State, Nigeria. The result obtained indicated that moisture content in pigeon pea is 12.10%. The protein content of raw and pigeon pea sprouted for 3, 4 and 5 days were 23.20±0.06, 24.10±0.01, 24.90±0.01 and 25.40±0.06% respectively. The carbohydrate content was 57.30±0.01, 40.50±0.06, 30.10±0.06 and 10.50±0.06% for raw, 3, 4 and 5 days sprouted samples respectively. The lipid content of raw pigeon pea was 1.50±0.01% while samples sprouted for 3, 4 and 5 days were 1.30±0.06, 1.10±0.01 and 0.80±0.06% respectively. The fibre content of raw, 3, 4 and 5 days sprouted samples were 8.10±0.01, 8.30±0.01, 8.60±0.01 and 8.80±0.67% respectively. The ash content of raw and samples sprouted for 3, 4 and 5 days were 3.80±0.06, 3.83±0.01, 3.87±0.01 and 3.90±0.01% respectively. The *in-vitro* digestibility of raw and samples sprouted for 3, 4 and 5 days were 80.14±0.01, 89.73±0.01, 93.35±0.01 and 97.70±0.06% respectively. The result shows that sprouting improved protein content, digestibility and also reduced anti-nutrient in pigeon pea.

Keywords: Nutrients, anti-nutrients, *in-vitro* digestibility, raw, sprouted, pigeon pea.

Effect of Sprouting and other Processing Methods on the Nutrient Content and *In-Vitro* Digestibility of Hybrid Cultivars of Pigeon Pea (*Cajanuscajan*)

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Abstract
The effect of Sprouting (3 – 5 days) and other processing techniques –Dry heating at 60°C, 80°C and 100°C for 30 minutes; Autoclaving at 120 or 760mmHg for 45 minutes; and boiling in acid, alkaline or neutral media for 45 minutes, on the nutrient content, and in-vitro digestibility of Pigeon pea were assessed. All processing methods except sprouted sample recorded significantly

($p<0.05$) lower protein content than observed in raw sample (23.00%). Sprouted sample for five days recorded the highest protein content (25.40%). All sprouted sample recorded significantly ($p<0.05$) lower amount of total carbohydrate than in raw sample 57.00%. Comparable or significantly ($p<0.05$) greater amount of carbohydrate were observed in samples processed with other techniques. Sample boiled in alkaline medium recorded the least fibre content (2.20%). Comparable fibre content as raw (8.10±0.01%) were recorded for samples sprouted for 4 and 5 days; autoclaved at 760mmHg in acidic or neutral medium and that autoclaved at 120mmHg in neutral medium. The least fibre content was observed in samples processed in hydrothermal alkaline medium. All processed sample recorded significantly ($p<0.05$) higher *in-vitro* digestibility than observed with raw 80.15±0.00%. The highest 97.70±0.06% was observed in sample sprouted for 5 days.The study suggests that the different processing techniques at varied time is a potent means of enhancing nutritional quality and vary nutrient content of the sample.

Keywords: Pigeon pea, *in-vitro* digestibility, nutrient composition, hydrothermal, thermal, autoclaving and sprouting.

Formulation and Characterization of Weanling Meal Based on Cassava Flour, Cassava Starch and Soya Beans Flour

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Adv. Nat. & Appl. Sci. Res. Vol. 8 2010 pp 245-252; The official Journal of the Chemistry Advancement Society Printed in Nigeria; ISSN-1597 0299 Available Online @ www.casjournal.org

Abstract
Dehydrocyanated, dried and pulverized cassava tuber was sourced for carbohydrate. Soybeans flour sourced at 16% protein (Nx6.38, dry matter basis) was added to the cassava flour to compound two formulations of instant food for weanling children. Subsequently, some of their physico-chemical characteristics - gelation, oil and water absorption of the formulated products were assessed alongside that of an approved market product, cerelac[R].Both formulations respectively recorded significantly ($p<0.05$) different physico-chemical indexes not comparable to those observed with the standard product. Oil absorption for formulation A (2.70±0.06) and formulation B (2.47±0.03) were insignificantly ($p>0.05$) different. Formulation A also recorded least gelation concentration with 26.67%.

keyword: Cassava, flour, formulation, weanling and dehydrocyanated.

Comparative Assessment of Nicotine Content in Some Cigarettes (Tobacco)

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Abstract
Twelve brands of cigarettes were purchased from the open market in Benin City, Edo State Nigeria for their Nicotine content. Nicotine was extracted with organic solvent from the respective brands and percentage nicotine content determined by titration with $0.1MH_2SO_4$. Mean values of 1.27 – 3.62% were observed in the products. Mean comparison reveals statistical significance ($P<0.05$) difference in the level in the brands values observed compared with those reported with HPLC/mass spectrometry or spectrophotometric methods determined. The study suggests that the procedure can be reliably used in quality control.

Keywords: Cigarettes, nicotine, brands, HPLC, mass spectrometry, quality control

Studies on the Pollution Potential of Wastewater from Textile Processing Factories in Kaduna, Nigeria

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Journal of Toxicology and Environmental Health Sciences Vol. 1 (2) pp. 034-037, July 2009 Available online at http://www.academicjournals.org/JTEHS,

Abstract
Samples of effluents from 3 textile processing factories F(1), F(2) and F(3), were characterized for their pollution potential. The concentrations of solids were found to be 1020, 790 and 1,380 mg/l total solids for the factories 1, 2 and 3, respectively. The BOD's and COD's were 342.8 and 542.4 mg/l for F(1), 123.2 and 224.6mg/l for F(2) and 456 and 738.4mg/l for F(3). The pH for the effluents were 9.36, 8.98 and 9.44 for F(1), F(2) and F(3), respectively. This implies that the effluents were alkaline. The nitrogen and phosphorus concentrations were 56 and 2.13 mg/l for F(1), 51 and 1.14 mg/l for F(2) and 43 and 0.73 mg/l for F(3), respectively. The levels of copper (Cu), zinc (Zn), iron (Fe), manganese (Mn), lead (Pb) and chromium (Cr) were higher than the Federal environmental protection agency (FEPA) standards for effluent discharge. This shows that the textile effluents have severe pollution potentials since the parameters measured have values above the tolerable limits compared to the FEPA standards. The results also showed that the ratio of COD: BOD were 1.58, 1.82 and 1.62 for F(1), F(2) and F(3), respectively, indicating that the effluents may not be able to undergo up to 50% substrate biodegradation, thus biological processes may not be feasible for the treatment of these effluents. The high values obtained for the parameters assessed, especially those of the concentrations of the solid and of the oxygen

demands, call for a pretreatment of the effluent before its discharge into water body. Also, the high conductivity observed shows that sufficient ions are present in the effluents, thus suggesting that the chemical method of coagulation and flocculation may be an ideal treatment method.

Keywords: Textile wastewater, factory, pollution, substrate, biodegradation, coagulation, flocculation.

Proximate Analysis of Three Popular Local Varieties of Rice

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J. Chem. Soc. Nigeria, Vol. 33, No. 2, pp 157 – 161 (2008)

Abstract
Rice is one of the most popular cereals in the world and its popularity has been ascribed to its carbohydrate content which is up to 84% and even higher in some cases. Proximate composition of three local varieties of rice, namely; Ekpoma long grain, Ekpoma short grain and Illushi grain were determined. The overall analysis of the total carbohydrate, soluble carbohydrate, fibre crude protein, ash and dry matter contents respectively were found to be significantly ($p>0.05$) different. The effect of par boiling paddy before milling on the nutrient composition was also determined. The result obtained were compared with the United Kingdom rice standard and it was observed that the protein, fibre, ash and carbohydrate (both soluble and total) contents of the par boiled rice were higher than the raw rice but compared favourably with the standard one.

Keywords: Rice, proximate analysis and local varieties

Comparative Studies of *Heveabrasiliensis* Latex and *Funtumiaelastica* Latex

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International Jour. Chem. Vol. 17, No.3(2007) 189-196.

Abstract
A comparative study of the properties of two lattices, *Heveabrasiliensis* and *Funtamiaelastica* was carried out. Auto and chemical coagulation of the lattices showed that *Heveabrasiliensis*exhibited some better properties in terms of total solids contents, dry rubber contents, dry rubber contents, which make it superior to latex from the *Funtamiaelastica*. The sludge and coagulum contents of *Heveabrasiliensis*were also higher. Latex from *Funtamiaelastica* has higher nitrogen content and better mechanical stability. *Funtamiaelastica* has a pleasant smell before and after storage and it does not decolourise on storage. It retains its colour and properties even after long storage of about 5 months without preservation. It is more viscous and has high mechanical stability, which makes it more durable. A blend of the two in

1:1 ration gives average properties of the two lattices which may enhance their applications in some areas.

Proximate Analysis of some Mineral Elements in the Eggs of common Domestic Birds

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Abstract
Mineral elements an in most biological systems are involved in many metabolic processes in the eggs of some common domestic fowls. Some essential and non- essential elements; viz: Ca, Mn, Na, Mg, Fe, Cu, Zn and I were spectrometrically determined in the eggs of some common domestic fowls; namely:free range native fowl *(Galusgalus)*, battery fowl *(Black hacko)* and duck (Muscovy).Whole deshelled eggs of these fowls were found to contain, in mg/100g, varying amount of the examined mineral elements as follows: *Galusgalus*; Ca, 138.62±0.42; Fe, 112.52±0.09; Mn, 77.29±0.16; Na, 62.14±0.42; Cu, 187.98±0.22; Mg 65.02±0.22; Zn, 58.09±0.02; I, 143.78±0.04. *Black hacko*: Cu,135.44±0.36; Mg, 47.08±0.08; Zn, 50.98±0.5; I, 140.96±0.21. Muscovy: 98.50±0.37; Fe, 73.32±0.20; Mn, 80.43±0.17; Na, 37.98±0.17; Cu, 119.73±0.26; Mg, 57.05±0.119; Zn, 63.51±0.32; I,103.77±0.28.

NutrientComposition and Functional Propertiesof *Pleurotustuberregium*

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African Journal of Sciences 2, 344–355.

Abstract
Studies on nutrient composition, antinutrients constituents and functional properties of *Pleurotustuberregium* (an edible fungus) were carried out using standard methods. Pleurotus tuber-regium(Pt-r) was found to contain 9gkg-1), 139.5 crude protein, 622.2 carbohydrate, 8.4 fat, 56.3 total ash, 82.0 fibre and 98.0 moisture content. This placed Pt-r as a potential source of cheap plant proteins and carbohydrates. It was also found that Pt-r did not contain haemagglutinins, contained very low levels of cyanide and trypsin inhibitory activities.Thus, it has nutritional advantage over many legumes and cereals as foodstuff. The results of functional properties analyses showed that Pt-r had high water absorption capacity, oil absorption capacity, emulsifying activities and stability when compared to flours from Pt-r could be incorporated into other flours used for the production of such foods as doughnuts, cake and ground meat formulations where high water and oil absorption capacities are required.

Effects of Thermal and Sprouting Processing Techniques on Amino Acid Content of Pigeon Pea *(CajanusCajan)*

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Abstract
Pigeon peas (CajanusCajan) were subjected to thermal and sprouting processing techniques and the effects of the treatments on the amino acids composition assessed. Significant differences ($p < 0.05$) in the levels of some amino acids in the raw and processed samples were observed. Thermal processing (80 ^{o}C) increased the lysine content while sprouting (day 3 and 4) increased the phenylalanine content. The study provided information on the effects of different processing methods on the amino acids availability of pigeon pea. This would influence the choice of processing method and enhance the utilization of pigeon peas for domestic and industrial purposes.

Keywords: Amino acids, pigeon peas, thermal, sprouting.

Physiochemical Characteristics and Functional Properties of Breads Made from Sweet and Irish Potato-Cassava Flour Blends

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Abstract
Dried sweet potato *(Taino batata)* and Irish potato *(Quechua papa)*were pulverised into flour. These were individually used to formulate composite flour blends with cassava (Manihot esculenta) flours. The sweet potato-cassava flour blends were prepare in the ratios of 80:0, 77:3, 75:5, 70:10, 65:15, and 60:20, while the ratios for Irish potato-cassava flour blend were 77:3, 75:5, 70:10, 65:15, and 60:20. The flour blend and the wheat flour were individually used to bake bread and measurements were carried out on the water absorption capacity (WAC), oil absorption capacity (OAC), emulsion capacity and stability (ECS), loaf volume (LV), specific loaf volume (SLV) and foam capacity (FC) of the baked product. With the exception of the oil adsorption capacity, wheat bread had significantly higher values ($P < 0.05$) in all the functional properties than the breads from the blends. The finding suggests that the flour blends may not be good substitutes for wheat flour in bread production. It is recommended that these blends should not be applied solely in bread formulations.

Keywords: Bread, cassava, emulsion, physic-chemical, potato

Effect of Processing on Some Anti-Nutritional Constituents of Pigeon Pea *(Cajanuscajan)*

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Abstract
Samples of local cultivar of pigeon pea (Cajanuscajan) seeds sourced from markets in Edo State, Nigeria were subjected to different processing techniques viz: (a) thermal processing at 60°C, 80°C, and 100°C for 30mins; (b) sprouting for 3, 4 and 5 days; (c) hydrothermal processing (boiling) in acidic, neutral and alkaline media for 45mins; (d) autoclaving at 120 and 760mmHg respectively in acidic, neutral and alkaline media. The effects of the respective treatments on some anti-nutrient contents were then assayed. Mean values of triplicate analysis were compared using the Tukey-Kramer's multiple comparison tests.Processing at 760mmHg in neutral or acid media did not affect the saponin content. Lower levels of saponin content were observed with other processing methods. Also, lower levels of tannin, cyanide, trypsin inhibitory activity, phytate and oxalate were recorded in the processed sample compared to the raw sample. Significant ($p<0.05$) decrease in flatulence index as reflected in oligosaccharide content was observed with sprouting of sample. It is recommended that these processing methods be routinely applied in pigeon-pea processing. The study also provides resource information on the effects of processing on anti-nutrient content that would enhance the utilization of pigeon pea in small and medium scale enterprises.

Keywords: Anti-nutrient, oxalate, phytate, Pigeon pea, saponins, tannin.

Studies on Polyphenol Content in Malted Cowpea *(Vigna unguiculata)*

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Abstract
Local cultivars of cowpea, *Vigna unguiculata* were steeped in water for six days. Each day samples were collected; dried; pulverized and analysed for their polyphenol content and browning potential. On both parameters, there was decrease in the values recorded ($p<0.05$). malting for six days yielded reductions in polyphenol content of 83.7 % which meets the acceptable level for domestic use.

Effects of Chemical Modifications on the Nutrient Content and Functional Properties of *Pleurotustuberregium*

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Abstract
Studies on effects of chemical modifications on the nutrient content, antinutrients and functional properties of *Pleurotustuberregium*(Pt-r) flour were carried out. Samples of Pt-r were subjected to water hydrolysis, mild acid hydrolysis, methylation and ethylation reactions. Unmodified samples contained 13.95% crude protein, 62.22% carbohydrate, 0.84% lipid, 9.8% moisture 5.63% ash, and 8.20% fiber contents. While the chemically modified samples had crude protein, carbohydrate, lipids and crude oil fibre were not significantly different among the samples. Chemical treatment significantly ($p<0.05$) reduced the trypsin inhibitory activity (TIA) of the Pt-r samples. Ethlation had the greatest effects of TIA reduction in the Pt-r samples. However, chemical treatment did not have any significant effects on the cyanide contents of the samples. The average cyanide contents in all sample was 3.95 7.07 x 10. This value was below toxic level. Haemagglutinins was not detected in the samples. Apart from water hydrolysis, all other chemical treatments significantly reduced water absorption capacity, oil absorption capacity, and emulsifying activity. All the samples exhibited poor whip ability and foam stability.

Keywords:*Pleurotustuberregium,* chemical modification, nutrient contents,antinutrients, functional properties.