ACADEMIC STAFF PROFILE FOR FACULTY OF LIFE SCIENCES

A. Photos

B.

B. Biography/Background (maximum 250 words)

IYAMU, Mercy Itohan hails from Udo, Ovia North East Local Government of Edo State of Nigeria. Faculty of Life Sciences, Ambrose Alli University, Ekpoma, Nigeria. Currently she is a Reader. Dr. Iyamu Mercy I. research interests span 29 years. She has a particular interest in Medicinal Plants and Antimicrobial activities of plants. She has published many peer-reviewed articles on her research and is a member of the Nigerian Society of Microbiology (NSM) and American Society of Microbiology (ASM). Some responsibilities held include Examination Officer (1999/2000; 2010/2011; 2014/2015; 2015/2016 academic session respectively), Hall Warden (Kudirat Abiola Hostel – 1st Nov. 2006 to 31st Aug. 2007) and Member - Welfare Committee (Faculty of Natural Sciences 2011/2012 session).

Dr. Iyamu Mercy I. joined the services of this University January, 1988.

C. Qualifications

- Ph.D (Microbiology), Ambrose Alli University, Ekpoma (2012)
- Master of Science (Food Microbiology), University of Ibadan, Ibadan (1996)
- PGDE (Education), University of Benin, Benin (1989)
- Bachelor of Science (Botany), Second Class Upper Division, University of Ibadan, Ibadan (1984)

D. Research Focus

- Medicinal Plants
- Antimicrobial activities of Plants

E. Professional Affiliation

N.S.M - Nigerian Society of Microbiology
A.S.M.- American Society of Microbiology

F. Social / Community engagements

Administrative Committee of the God's Kingdom Society, Ekpoma branch.

G. Publications (Books, Journals, Conference proceedings etc)

1. Comparative Analysis of the Antifungal Potentials of some brands of toothpastes commonly sold within Ekpoma Metropolis in Edo State, Nigeria.

Abstract:
Objectives: To evaluate the antifungal activity of some brands of toothpastes commonly sold to University students, within Ekpoma Metropolis of Edo State, Nigeria. **Materials and Methods:** Antifungal activity was determined by agar well diffusion method, were known weights of toothpastes were dissolved in 5ml of sterile pyrogen-free distilled water, to get concentrations varying from 12.50 to 200.00 mg/ml respectively. These were filled into wells punched into sabouraud dextrose agar medium plates inoculated with the test isolates, incubated at 35^0C. Inhibition zone diameters were read after 48 hr. **Result:** Maclean's and Dabur Herbal toothpastes had antifungal activity against *Microsporumcanis, Aspergillusniger* and *Candida albicans*, with zones of inhibition which ranged from 12 to 39 mm. There was no activity against *Aspergillusflavus*. Close-Up toothpaste had antifungal activity against *Microsporumcanis, Aspergillusniger* and *Candida albicans*, with zones of inhibition which ranged from 13 to 42 mm and no activity against *Aspergillusflavus*. Close-Up Herbal toothpaste had antifungal activity against *Microsporumcanis* and *Candida albicans*, with no activity against *Aspergillus* species used in this study. It produced zones of inhibition which ranged from 24 to 45 mm.
Conclusion: The various toothpastes evaluated had antifungal activities which varied and they may be useful in reducing the pathogenic potentials of the various fungi.

Keywords: Antifungal potentials, toothpaste, comparative analysis, non oral fungi.

2. Antibiotic Resistance Pattern of *Staphylococcus aureus* isolated from high Vaginal Swab and Urethral Swab Specimens.

Abstract:
This study was aimed at investigating the susceptibility pattern and plasmid profile of *Staphylococcus aureus* isolates obtained from high vaginal and Urethral swab using Standard Microbiological techniques. A total of fifty two (52) samples were collected from in and out patients of Irrual Specialist Teaching Hospital Irrua. Thirty nine (75%) of the samples were from high vaginal swab while thirteen (25%) were from urethral swab. Of the fifty two samples tested, only seven (13.5%) yielded growth of *Staphylococcus aureus.* Using the disc diffusion method, all seven strains showed 100% resistance against ampicillin, amoxicillin and nalidixic acid. The highest (26.3±1.54 mm) zone of inhibition recorded were reactions to ciprofloxacin. Strains SA1, SA2 and SA3 and SA4 recorded 9.5±2.82 mm, 7.8±2.34 mm, 7.5±2.92 mm and 8.1±3.03 mm mean zones of inhibition respectively to the twelve antibiotics tested. SA5, SA6 and SA7 recorded 14.3±2.93 mm, 9.0±3.48 mm, and 5.75±2.38 mm mean zones of inhibition respectively to the twelve antibiotics tested. Mean loss of 50.0% or more of resistance marker (RM) was recorded after treatment with acridine orange and only strains SA1 and SA4 retained their resistant genes. Thus this findings suggests the need for susceptibility testing before the administration of antibiotics.

Keywords: *Staphylococcus aureus,* antibiotics resistance, antimicrobial agents.

3. Phytochemical Screening and Antibacterial Activity of the leaves of African Locust Bean plant (*Parkia filicoidea* Welw.)

Abstract:
Petroleum ether, Acetone, ethanol, n-hexane and aqueous (cold and hot) extracts of the leaves of African Locust Bean Plant (*Parkia filicoidea* Welw.) were tested against the following six bacterial isolates: *Staphylococcus aureus* NCTC 10788, *Bacillus subtilis, Streptococcus viridans, Escherichia coli*, *Pseudomonas aeruginosa* and *Klebsiella pneumonia* using the agar well diffusion method. The crude powdered plant samples of leaves were subjected to phytochemical screening using standard methods to test for the presence of carbohydrates and reducing sugars, anthraquinones, cardiac and cyanogenetic glycosides, saponins, tannis flavonoids and alkaloids. The hexane and petroleum ether extracts of the leaves including the control solvents distilled water and dimethylsulphoxide (DMSO) exhibited no antibacterial activity. The aqueous (hot and cold) extracts of the leaves were generally active against the Gram positive bacteria *S. viriands* and *B.subtillis* including the control organism *S. aureus* NCTC 10788 with a zone of inhibition which ranged from 16.33±1.20 mm to 22.90±1.33 mm and 16.33±0.67 mm to 21.03±0.55 mm respectively. The minimum inhibitory concentration (MIC) for the bioactive extracts ranged from 2.50 to 15.00 $mgml^{-1}$. Acetone and ethanol leaves extract were active only against the Gram positive bacteria with a zone of inhibition which ranged from 15.00±0.00 to 22.00±1.15 mm. The test organisms were generally more sensitive to the commercial antibiotics gentamicin, ciprofloxacin and amoxicillin than the plant extracts with a zone of inhibition which ranged from 16.96±0.09 mm to 29.30±0.36 mm; *E.coli* and *K. pneumonia* were not sensitive to amoxicillin. Results of the phytochemical screening showed that carbohydrates, reducing sugars, saponins, tannins and flavonoids were present.

Keywords: Leave extract, minimum inhibitory concentration, antibiotics

4. Phytochemical Screening and Antibacterial activity of the Stem bark of African Locust Bean Plant (*Parkia filicoidea* Welw.)

Abstract
Acetone, ethanol, n-hexane, petroleum ether and aqueous (cold and hot) extracts of the stem bark of African Locust Bean Plant (*Parkia filicodiea* Welw.) were tested against six bacterial isolates: *Staphylococcus aureus* NCTC 10788. *Bacillus subtillis, Streptococcus viridans, Escherichia coli, Pseudomonas aeruginosa* and *Klebsiella pneumonia* using the agar well diffusion method. The crude powered plant samples of the stem bark were subjected to phytochemical screening using standard methods to test for the presence of carbohydrates and reducing sugars, anthraquinones, cardiac and cyanogenetic glycosides, saponins, tannis, flavonoids and alkaloids. The hexane and petroleum ether extracts of the stem bark including the control solvents distilled water and dimethylsuphoxide (DMSO) exhibited no antibacterial activity. The aqueous (hot and cold) extracts of the stem bark were generally active against the Gram positive bacteria *S.viridans* and *B.subtillis* including the control organism *S. aureus* NCTC 10788 with a zone of inhibition which ranged from 17.00±1.73 mm to 19.30±0.46 mm and 17.67±0.67 mm to 23.17±1.51 mm respectively. Acetone and ethanol extracts were active against both the Gram positive and Gram negative organisms *E.coli* and *P.aeruginosa* and *K.pneumoniae* with a zone of inhibition which ranged from 18.33±2.32.58 mm to 21.50±0.00 mm and 13.00±0.00 mm to 20.00±2.08 mm respectively. The minimum inhibitory concentration (MIC) for the bioactive extracts ranged from 2.50 to 20.00 $mgml^{-1}$. The test organisms were generally more sensitive to the commercial antibiotics gentamicin,

ciprofloxacin and amoxicillin than the plant extracts with a zone of inhibition which ranged from 16.96±0.09 mm to 29.30±0.36 mm. *E.coli* and *K. pneumonia* were not sensitive to amoxicillin. The results of the phytochemical screening showed that carbohydrates, reducing sugars, saponins, tannins and flavonoids were present.

Keywords: Stem bark, phytochemical, Acetone, MIC.

5. Bacteriological Quality and Prevalence of *Salmonella* in Chicken Product, Fruits and Vegetables

Abstract
The bacteriological quality and prevalence of *Salmonella* in chicken products, fruits and vegetables sold in Ekpoma market, Esan West Local Government Area, Edo State was studied. Out of the 20 samples examined, *Salmonella* specie was isolated from 6 samples. The mean total viable count (TVC) of bacterial isolates ranged from 3.6 x 10^{11} cfu/ml to 8.4 x 10^{11} cfu/ml for chicken sample, $1.2x10^{11}$cfu/ml to $7.0x10^{10}$cfu/ml for eg sample, $1.3x10^{12}$cfu/ml to $3.7x10^{12}$cfu/ml for egg shell, $2.1x10^{11}$ cfu/ml to $8.9x10^{11}$cfu/ml for fruits and $1.5x10^{10}$ cfu/ml to 3.5 though 80% of the isolates were susceptible to ciprofloxacin, a high antibiogram resistance was recorded.

Keywords: *Salmonella*, chicken product, antimicrobial test.

6. Comparative Analysis of Pathogenic Organisms in Cockroaches from different Community settings in Edo State, Nigeria

Abstract
Cockroaches are abundant in Nigeria and are seen to harbor an array of pathogens. Environmental and sanitary conditions associated with demographic/socio-economic settings of an area could contribute to the prevalence of disease pathogens in cockroaches. A total of 246 cockroaches (*Periplaneta americana*) in urban (Benin, n=91), semi-urban (Ekpoma, n=75) and rural (Emuhi, n=70), settings in Edo State, Nigeria were collected within and around households. The external body surfaces and alimentary canal of these cockroaches were screened for bacterial, fungal and parasitological infections. *Bacillus* sp. And *Escherichia coli* were most common bacteria in cockroaches. However, *Enterococcus faecalis* could not be isolated in cockroaches trapped in Ekpoma and Emuhi. *Aspergillus niger* was the most prevalent fungus in Benin and Ekpoma, while *Mucor* sp. Was predominant in Emuhi. Parasitological investigations revealed the preponderance of *Ascaris lumbricoides* in Benin and Emuhi while *Trichuris trichura* was the most predominant in Ekpoma. The prevalence and burden of infection in cockroaches is likely to be a reflection of the sanitary conditions of these areas. Also, cockroaches in these areas making incursions in homes may increase the risk of human infections with these disease agents.

Keywords: Capitalised, pathogen, sanitary condition, Nigeria

7. Intestinal Parasitic Infections in Two Groups of Students in a Semi-Urban Town in Nigeria

Abstract
Intestinal parasitic infections are still an important public health problem in developing countries of the world even though they tend to receive lesser attention than bacterial and

viral diseases. No published information on the comparative studies contrasting prevalence rates between primary school students and undergraduate students in this area available. This study was therefore aimed at determining the rates of infection in the two groups of students in Ekpoma, Nigeria. Two hundred and forty (240) stool specimens were collected from students (120 primary school pupils and 120 university students) residing in Ekpoma, and examined for presence of intestinal parasites. Each stool sample was examined macroscopically, and microscopically using the saline wet mount and the formol ether concentration techniques. 80 (33.3%) subjects were found to be infected with four different parasites. Prevalence rates of infection were 33.4% for *Ascaris lumbricoides* primary school pupils (25%), university students (8.3%); 26.7% for *Hookworm* primary school pupils (16.7%), university students (10%); 5.0% for *Trichuris trichiura* primary schools pupils (0%), university students (5.0%); and 1.7% *Entamoeba histolytica* primary school pupils (0%), university students (1.7%). The primary school pupils were mostly infected with *Ascaris lumbricoides* and *Hookworm*, while the university students had more infections with *Trichuris trichiura* and *Entamoeba histolytica*. Parasitic infection was much higher in primary school pupils (41.7%) than in university students (25%), and the difference was statistically significant (χ^2=3.75; $p < 0.05$). We recommend that enlightenment programmes should be mounted in schools and the community so as to inform people about the hazards of intestinal parasites, and employ appropriate preventive and control measures against these harmful parasites.

Keywords: Intestinal parasites, stool specimens, university students, primary school pupils, saline wet mount, floatation methods, Nigeria.

8. Seasonal variation in the bacteriological quality of Ebutte river in Ehor Community Edo State, Nigeria.

Abstract

The bacteriological quality of Ebutte River in Ehor Community was carried out to ascertain the variation in the quality of the river between August 2010 and January 2011. The bacteriological assessment was studied using the basic microbiological technqiues. The bacterial counts were shown to be highest in the inhabited point (3) with downstream (points 4 and 5) showing dilution effects of human activities and upstream (point 1 and 2) showing lower counts due to absence of human activities. Bacterial counts were higher than the acceptable limit of the WHO standards. The total viable counts ranged from 3.40 x 10^5 to 3.71 x 10^6 TVC (cfu/ml) for the months of August 2010 to January 2011. The bacterial counts were shown to be highest in the rainy season and the least total viable counts were recorded in the month of January at sampling point 5. Total coliform counts ranged from 27MPN/100ml to 350MPN/100ml while the faecal colilform counts ranged from 5MPN/100ml to 26MPN/100ml. The faecal *Streptococci* counts were recorded to range from <2MPN/100ml to 14MPN/100ml, while the *Clostridium* counts ranged from <2MPN/100ml to 6MPN/100ml. the bacteria isolated and characterized included eleven (11) bacterial genera among which are *Escherichia, Klebsiella, Pseudomonas, Bacillus, Enterobacter, Streptococcus, Salmonella, Staphylococcus, Proteus, Clostridium* and *Shigella*. Analysis of variance showed that there was a high significant difference ($P<0.001$) between total viable counts obtained in the two seasons while a significant difference ($P<0.05$) was obtained for total coliform counts and faecal coliform counts. Significant difference ($P>005$) was obtained for total faecal *Streptococci* and *Clostridium perfringens* counts. Correlation coefficient showed positive relationship between the total viable counts and some of the physiochemical parameters studied. Water quality assessment identified human, animal and agricultural

activities as the major sources of water contamination, thus the water from Ebutte river was considered unsuitable for direct human use and it poses a serious threat to the health of the consumers.

9. Phytochemical and Antimicrobial properties of *Emilia coccinea* (CASS.)

Abstract

Phytochemical and antimicrobial properties of *Emilia coccinea* used in the treatment of some diseases in Nigeria were investigated in this study. The phytochemical investigagtion revealed the presence of tannins, saponins, alkaloids, cardiac glycosides, steroids, flavonoids and lignia. The herbal preparations from this plant are used for managing a number of common ailment including diarrhea, craw-craw, and abscesses in the breast in this locality. When tested against *Escherichia coli, Staphylococcus aureus* and *Proteus vulgaris*, the aqueous, alcohol and chloroform extracts were more effective in inhibiting the growth of *Proteus vulgaris* than *Escherichia coli* and *Staphylococcus aureus*.

Keywords: Phytochemicals, Antimicrobials, *Emilia coccinea*, zone of inhibition

10. Microbiological assessment of Hospital Indoor Air Quality in Ekpoma, Edo State, Nigeria.

Abstract

A quantitative and qualitative study of indoor air in two hospitals in Ekpoma, Edo State was carried out. Samples were collected using the settle plate method for the enumeration of bacterial and fungal isolates. This study is aimed at checking the microbial concentration of indoor air as it relates to hospital type, ward and sampling time. The total heterotrophic microbial population varied in the wards sampled from hospital to hospital. The bacterial population ranged from 18cfu/m^3 to 288cfu/m^3nin Faithdome hospital and 8cfu/m to 494cfu/m^3 in Eromosele hospital. The fungal population ranged from 9cfu/m^3 to 26cfu/m^3 in Faithdome hospital and 3cfu/m^3 to 45cfu/m^3 in Eromosele hospital. The microbial floral isolated included six bacterial and six fugal genera among which are *Staphylococcus aureus, Klebsiella* spp, *Streptococcus* spp, *Bacillus* spp, *Pseudomonas* spp, *Escherichia coli*, *Aspergillus* spp, *Penicillium* spp, *Candida* spp, *Trichophyton* spp, *Microsporium* spp and *Rhizopus* spp. The degree of microbial distribution was highest in the waiting room and lowest in the theatre.

Keyword: Nosocomial infection, indoor air, *Staphylococcus aureus*

11. Assessment of the Effects of Arbuscular Mycorrhizal Fungi (*Glomus clarum*) and Pigeon Pea Hedgerow on the Yield of Maize and Soil Properties in Degraded Ultisols

Abstract

The use of the arbuscular mycorrhizal fungi (*Glomus clarum*) in ecological restoration enables its host plant to be established in degraded soil. Two years field experiment was conducted at Ekpoma, Nigeria to assessed the effects of *Glomus clarum* and pigeon pea hedgerow on soil properties, yield of maize and nitrogen fixation. A factorial experiment set up in a randomized complete block design with three replicates. Soil was analysed for both chemical and physical properties before planting after harvesting. The data collected were analysed using descriptive statistics and ANOVA at P=0.05. Mycorrhizal pigeon pea hedgerow significantly ($P \leq 0.05$) increased the nitrogen, phosphorus, potassium, magnesium and calcium content of the soil. Maize cultivated with the inclusion of mycorrhiza with or

without pigeon pea hedgerow was higher un growth compared to non mycorrhizal maize. Inclusion of mycorrhiza to hedgerow significantly increased the grain yield of maize which was 2,040 kg/ha compared to control with an average yield of 1,406.8 kg/ha. The grain yield of mycorrhizal hedgerow was increased by 48% compared to non-mycorrhizal pigeon pea. Inoculation of mycorhiza to sole pigeon pea and maize had significantly higher grain yield of 2,581.4 kg/ha and 2,349.2 kg/ha respectively in the residual experiment. The residual effect of *Glomus clarum* on maize and pigeon pea hedgerow significantly ($P \leq 0.05$) increased their grain yield by 41% and 56% respectively compared to the control. Also, inclusion of *Glomus clarum* significantly increased the nitrogen fixation of hedgerow pigeon pea compared to the hedgerow without *Glomus clarum*. The results showed the beneficial contribution of mycorrhiza and pigeon pea hedgerow on the growth and yield of maize as well as the nutrient content of the soil.

Keyword: *Glomus clarum*, hedgerow, maize, soil properties, degraded soil.

12. Bacteriological Quality of Abattoirs in Benin City, Edo State, Nigeria.

Abstract
Slaughtering of farm animal in open air or slaughter houses in cities is of public health, moral and aesthetic concern. This is the reason most abattoirs are situated on the outskirt of most towns and cities to reduces pollution. Four sample types taken from abattoirs in Benin City, Edo State were examined for bacteriological quality. The mean total viable count for raw beef, stream water used and swab from abattoir table respectively. Five bacterial genera were isolated – *Escherichia coli, Staphylococcus aureus, Vibro cholera, Bacillus* sp and *Alcaligenes* sp occurred only in the environment and swab from abattoir tables respectively. The level of bacteria isolated from the abattiior table and the environment indicated poor sanitary condition of the worker, poor sterilization of instruments used and insanitary working environment. These are collaborated with the observed presence of *Bacillus* sp, a spore former. Hence, there is strong need for adequate processing to avoid spread of association diseases.

Keyword: Bacteriological Quality, Abattoir, Benin City.

13. Microbial Assessment of Ground Melon Preserved with Salts

Abstract
Microbial assessment of ground melon preserved with some salts (sodium chloride, sodium citrate and a mixture of sodium chloride and sodium citrate) was evaluated. The results revealed that after 5 days, there were no changes in the microbial quality of the ground melon. However, both the preserved and the control (unpreserved) melon samples changed from milk to brown colour after 31 days. The melon preserved with 10% sodium citrate had the highest mean plate count of 8.0×10^7 cfu/g while the one preserved with 10% sodium chloride had the mean plate count of 5.0×10^7 cfu/g. *staphylococcus aureus*, *Klebsiella pneumoniae* and *Aspergillus niger* were isolated from the preserved and the control (unpreserved) samples.

Keyword: Microbial Assessment, Ground melon preserved, salts

14. A Comparison of preservation methods of traditionally processed Dawadawa

Abstract
The preservation of dawadawa using sun drying and oven drying was compared with fresh dawadawa for bacterial load, moisture content and nutritional content. *Bacillus subtillis* and *Staphylococcus* sp. were isolated from the fresh dawadawa while *Bacillus subtillis* was isolated from the sun dried and oven dried dawadawa. In terms of bacterial load, fresh dawadawa had the highest bacterial load of 10□cfu/ml, followed by sun dried with 10□cfu/ml and the lowest was oven dried which has 10□cfu/ml. Comparing the moisture content of dawadawa, the sun dried reduced from 100g to 36.5g while the oven dried reduced from 60g to 21.7g. The nutritional content of dawadawa was accessed based on its protein and glucose value. Oven dried dawadawa has the highest value for both contents with 52.94g/l and 45.83mg/dl with a pH of 6.5 respectively. Fresh dawadawa has protein value of 51.21 g/l but with the lowest glucose value of 41.67mg/dl with a pH of 8.1. Sun dried dawadawa has the lowest protein value of 51.18g/l, but with a glucose value of 43.75 mg/dl with a pH of 6.4 than the fresh dawadawa.

Keywords: Fermented locust bean, preservation, seeds, dawadawa, glutamate, seasoning.

15. Antimicrobial Activity of Extract of Bitter Leaf (*Vernonia amygdalina*)

Abstract
Antimicrobial activity of the leaf extract of *Vernonia amygdalina* was investigated on some test organisms using the agar diffusion and the tube dilution methods. The solvents used were water and ethanol. The result showed that *Staphylococcus aureus*, *Streptococcus feacalis, Pseudomonas* spp, *Streptococcus viridans, Bacillus subtilis* and *Corynebacterium diphtheria* were susceptible to the extracts while *Proteus* spp, *Klebsiella* spp, *Candida albicans* and *Escherichia coli* were resistant to the extract. For susceptible strains, the diameter of the zone of inhibition ranged from 9mm to 20mm. The ethanol extracted leaf extract was found to be relatively more effective against the test organisms than water extract leaf extract.

16. Effects of Different Salt Concentrations and pH on Growth of *Rhizobium* sp. and a Cowpea – *Rhizobium* Association

Abstract
The root environment of a legume undergoes constant changes as a result of chemical reactions taking place within the soil and these exert fluctuating osmotic pressure on the rhizosphere and its associated rhiobacterium. *Rhizobium* produces root nodules and is subjected to changes in the soil environmental conditions including salt concentrations and soil acidity. An experiment was conducted to find out the effects of varying salt concentrations ranging from 0.005 M to 0.200 M NaCl and a pH range of 3-9 on growth of *Rhizobium* as well as the cowpea associated with the Rhizobium. *Rhizobium* species from cowpea were capable of osmoadaptation and were found to tolerate a relatively high salt concentration of up to 0.200 M NaCl. However, the population count was inversely proportional to the salt concentration with high growth (30.0-31.6x10^4 cfu/mL) at lower concentrations of 0.005-0.010 M and low growth (7.4-19.2x10^4 cfu/mL) at higher salt concentrations of 0.050-0.200 M. The optimal pH range for the growth of the *Rhizobium* sp was pH 6-7 while lower or higher pH values recorded lower population counts. The present study revealed a low yield for the cowpea at higher salinity and low pH. To improve the yield of cowpea in a saline soil with low pH, it is essential to reduce the soil pH to a range of 6-8 and desalinate to enhance the growth of the cowpea as well as the *Rhizobium* sp. associated with it.

Keywords: Cowpea – *Rhizobium* association, salt concentrations, pH

17. Biodeterioration of Akpu produced from Cassava (*manihot esculenta-crantz*) and the effect of Sodium Benzoate alone or in combination with Ascorbic Acid

Abstract

Biodeterioration of Akpu produced from Cassava (*Manihot esculenta-Crantz*) during storage under tropical ambient temperature and the effect of sodium benzoate (SB) alone or in combination with ascorbic acid (AA) was investigated from eight (8) weeks duration. Results shows that high bioload ($1.01x10^9$cfu/g) and fungi count ($1.10x10^{10}$) was recorded at the 16th day of storage and thereafter decreases gradually. Treatment with different concentrations of SB and SBAA resulted in no growth of the associated microorganism up to the 28th and 42nd day of storage with minimal growth which was not sustained. Five bacteria genera (*Bacillus, Streptococcus, Staphylococcus, Pseudomonas,* and *Alcaligens*) and eight fungi groups (*Aspergillus, Pencillium, Fusarium, Allernaria, Rhizopus, Mucor, Trichoderma* and *Geotrichum*) were isolated during storage. Whereas, only *Bacillus, Streptococcus and Aspergillus* were detected in SB and SBAA treated samples. The pH decreased gradually to 3.26±0.01 while the titratable acidity increased to 0.05±0.01 at the end of storage period. However, these were fairly stable in SB and SBAA treated samples. The various degree of deterioration recorded in the protein, lipid, ash and carbohydrate contents at the end of the storage period were significantly different ($P<0.05, 0.01, 0.001$), but SB treated samples were fairly stable throughout the storage period. However, marked reduction was recorded in protein, lipid, ash and especially carbohydrate contents in SBAA treated samples. Fifty six (56%) percent decrease was observed in the hydrocyanic acid compared to 35% and 25% decrease noted in SB and SBAA treated samples respectively. Overall sensory evaluation shows that SB treated samples were highly acceptable even though freshly prepared samples were preferred.

Keywords: Biodeterioration, Akpu, sodium benzoate and Ascorbic acid.

18. Epidemiological Survey of Urinary Tract Infection in Pregnant Women and Infants Attending Clinic at Otibhor Okhae Specialist Teaching Hospital, Irrua, Nigeria

Abstract

Background: Urinary tract infection may be defined as the persistence, colonization and multiplication of microorganisms such as *Escherichia coli*, *Klebsiella aerogenes, Psseudomonas aeriginosa* and *Proteus* in the urinary tract. This disease is more common in women and could enter the newborn through any of the openings like the nose, ear and even the eye or any other opening.

Method: A total of one hundred midstream urine was collected from pregnant women and sixty from infants some of whom were newborns. The bacterial isolates were identified and antibiotic sensitivity tests of isolates were carried out.

Results: Of the one hundred urine samples collected from pregnant women, only sixty-eight had significant bacterial growth, while twenty-six had significant bacterial growth for urine samples collected from infants. Bacteria frequently isolated from both pregnant women and infants were *Escherichia coli, Proteus* sp., *Staphylococcus aureus, Streptococcus faecalis, Proteus ntriabilis, Proteus vulgaris* and *Klebsiella* sp. Oral peflacin, ciprofloxacin, cefluzine and nitrofurantoin were antibotics of choice to which the actiological agents were susceptible.

Conclusion: The high incidence of the infection in both pregnant women and infants suggests a relationship between infection in pregnant women and infants. There is the possibility that infants may have been infected by their mothers, either during birth or through unhygienic processes to the child after birth. There should, therefore, be proper checks of the urinary tract and birth canal of pregnant women before child birth. Nursing mothers should also practice high hygienic standards by frequently washing their hands while handling their infants.

19. The Effects of Fermentation Period on the Behaviour and Distribution of Microorganisms associated with Cassava Effluent

Abstract

The effects of fermentation period on the behavior and distribution of microorganisms associated with cassava effluent during ambient laboratory temperature (30.0 ± 2^0C) storage for 28 days was investigated. Results indicates high microbial count which increased steadily from 2.12 ± 0.04 $logi_{10}$ cfu/ml and 0.77 ± 0.00 log_{10} cfu/ml (14^{th} day) for total viable count and fungi count respectively, and thereafter decrease gradually till the end of the storage period. Ten (10) bacteria genera, *Bacillus, Streptococcus, Staphylococcus, Lactobacillus, Leuconostoc, Corynebacterium, Pseudomonas, Alclegene, Salmonella and Escherichi colil* while eighteen (18) fungi genera which include *Candida, Pichia, Alternaria, Fusarium, Mucor, Rhizopus, Aspergillus and Penicillium* were isolated. Ecological succession was observed amongst the various groups of organisms isolated. The early phase of the fermentation period was dominated by the bacteria group while the later phase was dominated by the fungi group. The pH (6.55 ± 0.05) decrease gradually till the end of the fermentation period at pH 2.15 ± 0.01. Conversely, the titratable acidity increased steadily throughout the fermentation period. The temperature increased up to 35.9 ± 0.1^0C on the 7^{th} day and thereafter decreased gradually. Findings are useful in developing durable data and indices for selecting relevant microorganisms and other environmental condition for biodegradation and subsequent remediation.

20. Microbial Ecology of Soya beans soaking for Milk Production

Abstract

The total viable count for the final product (Soya milk) was 0.43×10^4 and contained no coliform. The bacteria isolated at different stages of the production of the milk included *Bacillus sutillia* and *Staphylococcus* epidermidis which were consistently isolated from wash water. *Bacillus pumillis*, *Staphylococcus aureus* and *Micrococcus* sp. were consistently isolated from blended soya beans (extract matrix), while *Bacillus* sp. persisted with the onset of milk production with the exception of *Bacillus cereus*, other organisms were eliminated. The fungi found to have been associated with the different stages of production were *Aspergillus, Fusarium* and *Cladosporium* for wash water, *Rhizopus nigricans* and *Cladosporium* were isolated from the matrix got from blended soya beans. The final product contained no fungi. *Pseudomonas* spp. Predominant in the milk with off-odour while refrigerated milk (4^0C) also yielded colonies of *Pseudomonas* sp. after 72 hours with scanty growth of *Bacillus* spp.

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