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Research Article **Published Date:- 2020-12-15**

Determination of antibiotics susceptibility profile of Shigella species isolated from children with acute diarrhea

Diarrheal diseases continue to be the major cause of morbidity and mortality among children under 5 years. This study aimed to isolate, identify and determining the prevalence, antimicrobial susceptibility profile of Shigella sp associated with acute diarrhea among children in Kano, Northern Nigeria. A cross sectional study was conducted among children less than 5 years diagnosed with acute diarrhea and admitted to paediatric ward of Murtala Muhammad Specialist Hospital Kano. Stool samples from a total of 37 (20 male and 17 female) subjects were used to isolate and identified the pathogen. Antimicrobial susceptibility test was conducted using disc diffusion method. The result showed 12 out of 37 samples were positive for Shigella sp which accounted for 32.4%. Higher incidence of Shigella sp was found among subjects of age between 2 – 3 years. The isolates were 100% resistant to Ampicillin. High resistance was also observed in Amoxicillin (83.33%), Chloramphenicol (58.33%) and Tetracycline (25%). The isolates are 100% sensitive to ciprofloxacin, 66.7% to Levofloxacin and Gentamicin each and 58.33% to Erythromycin. Three (3) isolates were resistance to Ampicillin and Amoxicillin, 5 isolates were resistance to Ampicillin, Chloramphenicol and Amoxicillin while 2 isolates were resistance to Ampicillin, Chloramphenicol, Tetracycline and Amoxicillin. It is concluded that Shigella sp is one of the etiological agent of diarrhea in children. Ciprofloxacin, levofloxacin and Gentamicin are drugs of choice for treating diarrhea caused by Shigella sp.

Research Article **Published Date:- 2020-12-04**

A review on efficacy of Cissus quadrangularis in pharmacological mechanisms

Cissus quadrangularis a succulent vine belongs to Vitaceae family is widely distributed throughout tropical and subtropical regions of the world and used frequently to various disorders. The plant has been reported to contain flavonoids, triterpenoids, phytosterols, glycosides and rich source of calcium. This study aims to bring a systematic review of C. quadrangularis in various pharmacological mechanisms. Evidence from the previous studies suggested the efficacy of C. quadrangularis with antimicrobial, anti-diabetic, anti-inflammatory, anti-obesity, anti-oxidant, bone turnover, cardiovascular and hepatoprotective activities. In conclusion, Cissus quadrangularis appears worthy of pharmacological investigations for new drug formulations.

Research Article **Published Date:- 2020-10-13**

Atherogenic risk assessment of naive HIV-infected patients attending Infectious Diseases Service of Kinshasa University Teaching Hospital, Democratic Republic of the Congo (DRC)

Background and aim: Metabolic abnormalities are common in HIV/AIDS. Increasingly, lipid ratios are used as screening tools for dyslipidaemia in these medical conditions. The aim of this study was to assess the ability of 4 lipid ratios to predict cardiovascular risks.

Methods: This is a cross-sectional and analytical study included 105 HIV+ patients followed in Kinshasa University Teaching Hospital (KUTH). Four indices [Atherogenic Index of Plasma (AIP), Castelli Risk Index (CRI) I and II, Atherogenic coefficient (AC)] were compared. Statistical analyzis consisted of measuring frequencies and means, Student's t-tests, ANOVA and Ficher's exact test, and the calculation of the Kappa value.

Results: Lipid ratios predicted respectively the risk in 62% (AIP), 28.6% (CRI-I) and 23.8% (CRI-II). CRI-I and II were elevated, especially in women. The AIP appeared to be a better predictor than CRI-I and II to assess dyslipidaemia in general and the high-risk frequency. The cholesterol detected risk in 66.7% (Low HDL-C), 50% (High LDL-C), 38.9% (High TC and/or TG).

The atherogenic risk was higher with age, advanced WHO stage, HIV-TB, HBV-HCV co-infections, smoking and alcohol intake. Haemoglobin (Hb) and CD4 counts were low when the risk was high. Age ? 50 years, stage 4 (WHO), CD4s+ ? 200 cells/µL were independent factors associated with atherogenic risk.

Conclusion: Lipid ratios can be used as reliable tools for assessing cardiovascular risk of naïve HIV-infected patients who received HAART.

Research Article **Published Date:- 2020-08-11**

Estimating global case fatality rate of coronavirus disease 2019 (COVID-19) pandemic

Background: There is a huge global loss of lives due to COVID-19 pandemic, the primary epicentre of which is China, where the causative agent of the disease, SARS-CoV-2 was first emerged in December 2019. This study aims to explore the severity, in terms of case fatality rate (CFR), of COVID-19 pandemic.

Methods: Data of ongoing COVID-19 global pandemic were retrieved from website of the WHO, and processed for the estimation of global (both including and excluding China) CFRs of COVID-19. CFRs were explored following the naive estimates, 14-day delay estimates, and linear regression model analysis, during January 25, 2020 to April 25, 2020, on weekly basis. To explore the current situation, in terms of CFR, data for the next 13 weeks (May 2, 2020 through July 25, 2020), were processed by naive and linear regression model analysis.

Results: Mean CFRs, in naive estimates, were 4.59% for the world including China, and 3.62% for the world excluding China. The 14-day delay estimates of CFRs were 15.6% globally, and 21.65% in countries outside China. Following statistical model, global (both including and excluding China) CFRs were 6.81%, by naive estimates, and ~13%, by 14-day delay estimates. Global CFRs of COVID-19 during May 2, 2020 to July 25, 2020, ranged 4.1% – 7.04%, by naive estimates, and by statistical regression analysis the CFR was 3.19%.

Conclusion and recommendations: The CFR might help estimate the need of up-to-date hospital supplies and other mitigation measures for COVID-19 ongoing pandemic, and therefore, instantaneous CFR estimations are recommended.

Research Article **Published Date:- 2020-05-28**

Characterization of plastic degrading bacteria isolated from landfill sites

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The plastic pollution is threatening the environment because it has very slow degradation rate and high usage in regular activities. The present study aims at the isolation of novel microorganisms that would assist faster degradation process of polyethylene. The waste samples were collected from different landfills and dumpsites. Out of forty samples, eight samples were found to degrade polythene strips in liquid medium. Further screening of these samples showed that two strains of microbes had high potential for polythene degradation. Biochemical tests and ribotyping were performed for characterization of isolated bacteria. Resultantly, two novel bacterial strains were identified named; Bacillus wudalianchiensis_UMT (2A) and Pseudomonas aeruginosa_UMT (6). Analysis of these microbes further revealed that Bacillus wudalianchiensis_UMT and Pseudomonas aeruginosa_UMT have capability to degrade 6.6% and 4.8% polyethylene respectively. So, the results disclosed that these bacteria have great potential to degrade polythene in less time as compare to natural degradation process and can contribute to reduce pollution from our environment.

Research Article **Published Date:- 2020-05-11**

Physicochemical and microbiological quality of tanker waters in Bengaluru urban for safe water supply

This study investigated the water quality of tanker waters that was collected from Bengaluru urban areas to assess its suitability for domestic purpose. A total of 50 samples were collected in dry (March 2019) season. All samples were analyzed for various hydrochemical parameters, such as pH, total dissolved solids (TDS), electrical conductivity (EC), turbidity, dissolved oxygen (DO), total hardness (as CaCO3), calcium (CaCO2+), chloride (CaCO?) and nitrate (NO3?). Bacteriological analyses of water samples were analyzed for total coliform count. A very high level of total hardness (186 - 434.6 mg L-1) was determined in 27 water samples tested in this study indicating the necessity of water treatment before used for domestic purpose. Of the 50 samples tested, 7 showed a most probable number (MPN) index of < 23 and 9 showed < 240 and the remaining 34 were unsatisfactory with an MPN index of > 1600 per 100 ml. In some locations, the presence of high MPN index, in particular, rings the bell before using the tanker water in houses and restaurants. Exploration of the mechanisms by which water quality deteriorates during supply chain and potential implication for regulatory policy for monitoring of tanker water while distribution is the need of the hour.

Mini Review **Published Date:- 2020-05-11**

Role of T-Helper cells (CD4+ T Cells) in human immune system against some microbial infection: A mini review

The human immune system consists of innate and adaptive immune responses which both provide protective immunity to microbial infection. The adaptive immune system consists of T and B cell which act as second line defense through production of neutralizing antibody by B cells and cytotoxic activity of CD8+ T cells. The CD4+ T-cell performs a central role in the immune responses. These cells also known as T4 or helper/inducer T lymphocytes recognize antigens presented by antigen presenting cells (APC) such as macrophages and monocytes. Once antigens such as bacteria and viruses are presented, CD4+ T lymphocytes orchestrate the body's antigen-specific immune response by Coordinating B-lymphocyte production of antibodies to these antigens, producing cytokines and induction of cytotoxic T-lymphocytes. The paper was aimed to review the role of T-helper cells (CD4+ T cells) in human immune system against some microbial infections.

Research Article **Published Date:- 2020-03-30**

Development of ELISA based detection system against C. botulinum type B

Botulism is the disease caused by botulinum neurotoxins. It is produced by an obligate anaerobic bacteria called Clostridium botulinum. There is no immuno-detection system available in the world for the detection of C. botulinum. Secretory proteins of cooked meat media grown C. botulinum type B were extracted by TCA precipitation method. Polyclonal antibodies were generated against secretory proteins. Cytokine profiling of secretory proteins were done. An immunodetection system was developed to detect the C. botulinum type B using Secretory proteins of C. botulinum type B.

Research Article **Published Date:- 2020-02-27**

Production and evaluation of enzyme-modified lighvan cheese using different levels of commercial enzymes

Enzyme-modified cheeses are concentrated cheese flavors produced enzymatically from dairy substrates in order to provide an intense source of cheese flavor with broad applications. Lighvan cheese is an Iranian traditional cheese with a pleasant taste and flavor generated after ripening. Therefore, the objective of the present study was to use commercial enzymes to produce enzyme-modified Lighvan cheese made from unripened and immature cheese. In this study, Neutrase (0.05%, 0.15%, and 0.2%) and Flavourzyme (0.05%, 0.1%, and 0.2%) were added to the base mixture. The resulting mixture was stored in an incubator for 24, 72, and 96 h to provide intense cheese flavor. Sensory evaluations of all samples in terms of bitterness, flavor, taste, and general acceptance were also carried out.

The results of the sensory evaluations revealed no significant difference between most of the samples in terms of bitterness, flavor, taste, and general acceptance with respect to the incubation duration and the type and level of the commercial enzymes (p ? 0.05). However, the effect of the different concentrations of Flavourzyme on the cheese texture was significant after 24, 72, and 96 h of incubation (p ? 0.05). In addition, the effects of the different concentrations of Neutrase on the cheese texture were significant after 96 h of incubation (p ? 0.05). Finally, the effect of different concentrations of Flavourzyme on the general acceptance of the samples was significant following 24, 72, and 96 h of incubation (p ? 0.05). In general, considering the flavor, taste, texture and general acceptance scores of the enzyme-modified Lighvan cheese samples, the best sample was the sample produced by using 0.1% Neutrase and 0.1% Flavourzyme mixture.

Research Article **Published Date:- 2020-02-26**

in silico discovery of potential inhibitors against Dipeptidyl Peptidase-4: A major biological target of Type-2 diabetes mellitus

Objectives: Type-2 diabetes mellitus, caused by impaired secretion of insulin, is becoming one of the health hazardous threats to human lives across the world. Its prevalence is rising with time. In this study, 2750 phytochemicals, that are considered to have great ability to eliminate diseases caused by different viruses and bacteria, are obtained from different medicinal plants and discovery of inhibitors through in silico method was performed against Dipeptidyl peptidase-4 (DPP4).

Method: The pharmacological assessment and pharmacokinetics of phytochemicals, molecular docking and density functional theory (DFT) analysis helped to explore the inhibitory action of phytochemicals against DPP4. Total forty-nine phytochemicals were screened initially to reduce the number of compounds to be analyzed further based on a threshold of binding affinity ? -5.5 kcal/mol and were considered for further computational studies to analyze their inhibitory effects for DPP4. For comparison and validation of the results of present study, various previously reported and experimentally validated compounds were docked with the DPP4. For these dockings, binding affinity was predicted and compared with those of phytochemicals to check if these phytochemicals are competent enough to be used as an inhibitor in the treatment of diabetes mellitus in the future.

Results: Only four phytochemicals showed binding affinity greater than those of experimentally validated compounds. These included two phytochemicals from Silybum marianum, i.e. Diprenyleriodictyol and Taxifolin and while other two phytochemicals from Santolina insularis and Erythrina Varigatae i.e. Papraline and Osajin respectively. The reactivity levels for these four phytochemicals with the binding site residues of DPP4 were obtained by DFT based analysis, in which ELUMO, EHOMO and band energy gap were computed.

Conclusion: Based on these results, it is concluded that these four phytochemicals, after passing through in vitro and in vivo validation, can be utilized as potential DPP4 inhibitors as they have strong properties as compared to those of various experimentally validated inhibitors.
