

POSTER ABSTRACTS - DRAFT

(P – 01)

Sensitivity and Specificity of Clinico-radiological Assessment in Predicting Necessity For Operative Exploration – The Jamaican Experience at Kingston Public Hospital and University Hospital of The West Indies.

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OBJECTIVE: Penetrating neck injuries are seen frequently at our institutions which serve as referral centers for the management of penetrating neck injury. We aim to document the clinical outcomes of these injuries, to determine the sensitivity and specificity of clinical assessment in predicting injuries requiring operative intervention.

METHODS: A combined retrospective and prospective study was done of all patients with a diagnosis of penetrating neck injuries in our institutions from August 2016 to December 2017

RESULTS: 152 patients were included in this study with a diagnosis of penetrating neck injury. Most victims of penetrating neck injury were males (88.7%). Knives were found to be used most commonly as the offending instrument in 55.7% of cases. Zone 2 injuries were identified 40% of the time. For the duration of the period of study examined, there were no cases of mortality.

CONCLUSION: Penetrating neck injuries contribute significantly to the spectrum of trauma in Jamaica. Clinical examination remains a sensitive and specific tool in the detection of clinically significant penetrating neck injuries requiring operative intervention.

(P – 02)

Splenectomy in Sickle-cell Disease: Experience with a Selective Blood Transfusion Protocol in Children

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OBJECTIVE: Review of morbidity and mortality post splenectomy utilizing a selective transfusion protocol in children with sickle-cell disease(SCD).

DESIGN AND METHODS: Patients were either not transfused (those at steady state Haemoglobin(Hb) or above) or transfused (when Hb values were >1g/dl below steady state). Blood transfused to raise sub-steady state Hb cases to approximately 10g/dl.

PATIENTS AND METHODS: A retrospective study ,November 1994 - October 2017. Acute chest syndrome (ACS) other complications post-operatively were quantified.

RESULTS: 150 open splenectomies were performed, 127 with homozygous sickle-cell (SS) disease and 23 with non-SS SCD disease. Of the 127 SS disease patients, 9 of 99 who were not transfused developing ACS (9.1%). Only one of 28 who were transfused (3.6%) developed ACS. One of 23 non-SS patients developed ACS and that patient was not transfused. ACS developed in 5 of 77 SS disease patients with acute splenic sequestration(ASS) who were not transfused but none of 16 ASS transfused homozygous patients. 18.2% of non-transfused chronic hypersplenism(CHS) SS disease patients developed ACS compared to 8.3% among CHS transfused. Cases with Hb > or=10g/dl on pre-operative evaluation had no ACS.

CONCLUSION: Mona Blood Transfusion SCD Protocol, a no mortality and low morbidity option suited to scarce blood products environments

Key words: Splenectomy, sickle-cell disease

(P – 03)

Antibiotic Susceptibility and Epidemiological Characteristics of MRSA at the University Hospital of the West Indies

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Objectives: To determine the epidemiology and resistance patterns of Methicillin Resistant *Staphylococcus aureus* isolates (MRSA) at the University Hospital of the West Indies (UHWI).

Methods: All de-duplicated clinical samples submitted for routine analysis between January and December 2017 were included to determine the epidemiology and antibiotic susceptibility of MRSA. Samples were processed using standard laboratory methods for culture and susceptibility testing. Comparisons were made with data obtained in 2008 and 2013.

Results: During 2017, there were 689 *S aureus* isolates among 7304 samples; of which 31 (4.5%) were methicillin resistant. Most of these were obtained from adults (9-64 yrs); surgical wards (29%), the Accident and Emergency Unit (16%), and the Intensive and Critical Care Units (13%). Of the MRSA isolates, 40% were obtained from wound and tissue samples, 23% from blood, 14% from sputum, 7% from eye swabs and the remaining 21% were from other samples including urine. All MRSA isolates showed 100% susceptibility to vancomycin, linezolid, minocycline, rifampin and topical chloramphenicol, neomycin and tetracycline. The highest level of resistance was to erythromycin (93%).

Conclusions: The prevalence of MRSA at the UHWI remains below 10% and overall susceptibility patterns have remain unchanged over the last 10 years.

Key Words: *Staphylococcus*, resistant, MRSA

(P – 04)

Distribution and trends in environmental and clinical fungal isolates over 3 years at the University of the West Indies Mycology laboratory.

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Objectives

To determine the distribution of fungal isolates identified over a three-year period at the University of the West Indies (UWI), Microbiology Laboratory.

Methods

Laboratory information system (LIS) data was used to facilitate retrospective analysis of all samples sent to the department between January 1, 2016 and December 31, 2018.

Results

Of 24,062 samples submitted during the period, 4710 were positive for fungi. *Penicillium*, *Aspergillus*, and other dematiaceous and hyaline species accounted for the majority of the 1122 environmental isolates. De-duplication exercises revealed clinical isolates were from 2643 patients [72% (n=1910) females; 27% (n=718) males; 1% (n=15) gender unknown]. The over 60 years age group had the largest number of patients (n=796) followed by the 21-30 years group (n=524). *Candida albicans* accounted for 45% of clinical isolates (n=1183) followed by non-albicans (n=919), *Aspergillus* (n=105) and *Cladosporium* species (n=65). *Cryptococcus neoformans*, was the 10th most commonly isolated organism, with 56% being from cerebro-spinal fluid (CSF) samples. High vaginal swabs provided the bulk of the clinical isolates (27%, n= 708) followed by urine (n=614), sputum (n=363), then nails (n=259). *Candida* species remained the most commonly isolated fungi amongst all patient sources except for hair and scalp scrapings where *Trichophyton* species predominated.

Conclusions

Speciation and susceptibility testing of *Candida spp.* is necessary in this setting to guide antifungal therapy. Patients over 61 years are at increased risk for these fungal infections and their associated morbidity and mortality. Use of settle plates for determination of building contamination while not gold standard remains beneficial in resource limited settings.

Keywords: Candida, fungal, environmental

(P – 05)

Knowledge and Practice Related to Lifestyle Among Adults with Diabetes and Hypertension

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Background: Diabetes and Hypertension are among the leading causes of preventable morbidity and related disability worldwide. The shift in disease burden from infectious diseases to non-communicable diseases has been attributed to dietary and physical activity changes.

Method: In this cross-sectional study using 150 randomly selected adults from primary health care centres in seven parishes of Jamaica. A 69-item interviewer-administered questionnaire was used. The questions measured knowledge and lifestyle practices related to diet, smoking, exercise and alcohol consumption.

Results: The majority (76.0%) of the sample was female and most (68.6%) persons were within the age group of 56 years or over. The mean knowledge score for exercise was 4.7 (SD 1.2) with a score range of 1 to 6. There were no statistical differences in mean knowledge of exercise by socioeconomic and demographic characteristics. Nine of the ten questions assessing knowledge of diet were answered correctly by the majority (50.7% - 93.3%). The mean knowledge score for alcohol consumption and smoking was 5.5 (SD 0.9) and 2.9 (SD 0.3), respectively.

Just over a half (52.3% and 53.0%) of the sample reported exercising and consuming sugar-sweetened beverages respectively. A minority (10.7%) reported drinking alcohol in the last three months and less than one in twenty (4.7%) of the sample reported that they are currently smoking.

Conclusion: Mean knowledge scores for exercise, alcohol consumption and smoking were relatively high, while harmful lifestyle practices among participants was relatively low. We recommend further research to assess the facilitators and barriers to adopting lifestyle changes among Jamaican adults.

Keywords: Knowledge, Lifestyle, Practice, Diabetes, Hypertension

(P – 06)

The Replantation Experience of the University Hospital of the West Indies

Background:

The UHWI is the referral center for extremity replantation in Jamaica. Factors affecting successful outcome of the patients replanted at UHWI were analysed, so as to inform future management and referral protocols.

Methods:

A retrospective review was performed on UHWI replant cases done between 2004-2017. Factors analysed included: age, sex, smoking status, mechanism of injury, geographic location (distance from referral center) and time taken from incident to replant.

Results:

31 replantations were performed at UHWI between 2004-2017; 87% (27 patients) were machete assault injuries, 13% (4 patients) were crush injuries (3 being industrial and 1 from a motor vehicle accident). There were 31 cases reviewed; of which 93.5% were male with 81% being forty years or under. The circumstances were related to assault; with use of machete in 87% of cases. Three were due to industrial accidents and one due to a motor vehicle accident. Twenty-three out of thirty-one patients (74.2%) had successful replantation, The 8 failures of which 50% occurred in Zone 3, being the only zone with a greater chance of failure than success. There was an 87.5% (7 out of 8) success rate in thumb replantation. Neither smoking status nor distance from the tertiary center (UHWI) had a statistically significant effect on outcome.

Conclusion:

As the referral centre for replantation in Jamaica, the UHWI has the largest body of experience in the last 15 years. Neither a positive smoking history nor rural location should deter referral as both showed no statistical effect on a possible successful outcome in this setting.

(P – 07)

Need for Intervention to improve glycemic control among patients at the University Health Centre

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Objectives: To examine the level of patient knowledge of type 2 diabetes mellitus (T2DM) drug therapy, adherence to drug therapy and glycemic control among patients at the University Health Centre (UHC).

Method. A cross-sectional study was conducted between July 1 to July 19 at the University Health Centre Pharmacy. Patients with T2DM were recruited according to eligibility requirements. Eligible patients were required to give consent before completing a data collection form, a pharmacy-lead educational program receptiveness form, a medication knowledge assessment questionnaire and an adherence assessment tool. Adherence to drug therapy was measured using Morisky Green Levine Tool, both fasting blood glucose (FBG) and the glycosylated haemoglobin (HbA1c) were used to evaluate glycaemic control.

Results: Twenty- three patients were recruited with 15 patients reporting being registered at UHC for greater than 10 years. Most patients (14/23) were taking 2 or 3 antidiabetic drugs and 17 patients were taking between 1 to 8 other drugs for comorbidities. Most of the patients (12/23) had medium adherence to their overall drug therapy, 6 had high and 5 low adherence. Most patients (17/23) knew all the drugs they were taking to treat their T2DM, while 6 knew some or none; there was no correlation between knowledge of T2DM drug therapy and adherence. There was significant negative moderate correlation of HbA1c, FBG and adherence to drug therapy (Spearman's rho = -0.492; p=0.017 and= -0.489; p=0.018 respectively), but most patients had poor glycemic control with the mean HbA1C of 7.8 (1.6)% and FBG of 8.6 (4.1) mmol/L.

Conclusions: Our results therefore support the evidence that good adherence is related to good glycemic control. The poor glycemic control obtained for the group suggest a need for interventions beyond knowledge of T2DM drug therapy to improve adherence.

(P – 08)

Attitudes Toward Older Adults and Ageing: The UWI (Mona) Physiotherapy Students' Perspective

SKP Williams & W. Palmer

Objectives: This study investigated first to third year undergraduate physiotherapy students' attitudes toward older people and ageing and explored associations between student characteristics, exposure to older adults, completion of gerontology course content and their attitudes.

Methods: Data for this cross-sectional study were collected from students in the BSc. Physical Therapy programme using the Kogan's Old People Scale (KOPS) and a demographic questionnaire. Descriptive and inferential statistics were used in data analysis.

Results: One hundred and ten students participated, representing approximately 90% of the student population. Forty-one (37.3%) were from year one, 39 (35.5%) from year two and 30 (27.3%) from year three. Age ranged from 18 years to 31 years, with a mean of 21.5 years, a median of 21.0 years and a mode of 20 years. The majority (n = 80; 72.7%) were female.

Attitude measured by the KOPS was overall slightly positive (mean = 147.06 \pm 17.00, median = 149.00, mode = 150.00). Those who were female, who had been exposed to older adults in the clinic, who had completed course content in gerontology, and who had reported a fulfilling social relationship with an older adult, had marginally more positive attitude scores. These differences however were not of statistical significance.

Regarding working with older adults after graduation, students reporting an interest to work with older adults and those who were not sure about their interest, had more positive KOPS mean scores (147.22, \pm 17.01 and 151 \pm 17.80 respectively) than those who did not want to work with older adults (M = 140.04 \pm 17.80), (p = 0.04).

Conclusion: It appears that students who have been exposed to, and educated about older adults, are likely to have more positive attitudes. Further research is however needed.

(P – 09)

Investigation of the Preliminary Mechanism of Action for the Acute Anti-Inflammatory Activity of the Methanol Extract of *Smilax Ornata*

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Background:

In folkloric medicine, the dried rhizome (1-4 g) of the Jamaican sarsaparilla (*Smilax ornata*), is given as a decoction three times daily to treat chronic rheumatism and rheumatoid arthritis. This particular claim has been scientifically validated; however, the mechanism for its anti-inflammatory activity is still unknown and hence, it forms the reason for this investigation.

Objective: The objective of this study is to investigate the mechanism of the anti-inflammatory activity of the methanol extract of *Smilax ornata*.

Method:

The methanol extract was prepared using the Soxhlet apparatus. The preliminary mechanism of action was investigated using models of oedema induced by histamine, bradykinin and prostaglandin E₂.

Results:

For the histamine-induced oedema model, the methanol extract (400 mg/kg) reduced the oedema formation, however it was not significant ($P > 0.05$). For the bradykinin-induced oedema model, the methanol extract (400 mg/kg) exhibited significant ($P < 0.05$) anti-inflammatory activity when compared with that of the control (saline) group, with an onset on 60 minutes and a duration of 2 hours. For the prostaglandin-induced oedema model, the methanol extract (400 mg/kg) exhibited significant ($P < 0.05$) anti-inflammatory activity when compared with that of its control group, with an onset on 120 minutes and a duration of 1.5 hours.

Conclusion: The methanol extract of *Smilax ornata* produced significant anti-inflammatory activity in the bradykinin-induced and prostaglandin-induced oedema models. It is possible that the mechanism by which it acts is by reducing the concentration of these mediators.

(P – 10)

Introducing Medical Students to Pharmacovigilance through a Basic Research Skills Special Study Module

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Objectives: Pharmacovigilance is an important aspect of clinical practice, however, it is not a formal theme in the Bachelor of Medicine, Bachelor of Surgery (MBBS) programme. The aim of this study was to introduce MBBS students to the importance of pharmacovigilance through a basic research skills special study module. **Methods:** Ten students completing years one and two of MBBS programme volunteered to work with module coordinator from May 16th to June 12th 2019 to complete forty hours of structured content sessions and self-directed activity. Sessions focused on the importance of pharmacovigilance and guided steps to complete a non-experimental qualitative research focused on an adverse reaction reported for a drug of personal interest to each student. The final output was a poster displayed at an open mini-symposium at which each student made a five minute oral presentation for grading. Posters were assessed for agreement with guidelines provided and graded by academic staff and senior research graduate students; grades were analysed using median with interquartile range [IQR] out of a maximum score of 12. **Results:** All students completed the research project producing posters which followed the guidelines by more than 70%. Median grades were 9.8[3.1] for the presence of the required elements, 10.0[2.0] for relevance of the poster graphics, 9.5[2.0] for attractiveness/neatness and 10.0[2.5] for oral presentation. **Conclusions:** Students in the MBBS programme were competently able to complete this structure basic research skills module focused on importance of pharmacovigilance and could be adopted into the curriculum.

(P – 11)

Assessing the effects of Alcohol, Nicotine and Cannabis on the heart rate and rhythm using *Danio rerio* (Zebrafish) as an animal model

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Background: Heart disease is a major health concern and according to the WHO, it is the main cause of deaths worldwide. Due to the implications, it is important to find a way to effectively screen substances that possibly result in heart diseases. In this study, we focused on evaluating the effects of Alcohol, Nicotine and Marijuana and how they impact the heart rate and function, using the Zebrafish (*Danio rerio*) as an animal model. Zebrafish were selected due to its larval transparency and genetic similarity (70%) to humans.

Method: Zebrafish larvae selected for testing depending on their age and condition. For each experiment, the larvae were treated with the particular substance dissolved in a 3-4% methyl cellulose medium, and allowed to stand for at least 5 minutes before being tested using a Dissecting Microscope with a digital camera attached to record the larvae placed in 96-wellplate. The video recordings of the heart were then analysed using the ImageJ software and the data compiled in Microsoft Excel.

Results: The control heart rate was found to be between 215 bpm 223 bpm, for the ventricle and atrium, respectively. However, the heart rate changes significantly when the larvae were exposed to Alcohol, Nicotine and Marijuana. Alcohol resulted in a decrease while Nicotine and Marijuana both increased the heart rate, similar to that seen in literature.

Conclusion: The results obtained from the study indicate that these addictive drugs studied all influence the heart rate of zebrafish.

Keywords: Heart disease, Marijuana, Zebrafish

(P – 12)

Reconstitution of Resveratrol and Alcohol affects caudal fin regeneration and mortality differently when compared to Red Wine.

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Introduction: Wine is an alcoholic beverage, made from the fermentation of fruit juices, usually grapes. Wine has been a popular beverage since ancient times. Resveratrol is a polyphenol found in grapes, that is associated with growth inhibition. There have many contradictory reports on the overall health benefits of regular wine consumption, with some sources claiming that it has positive effects on growth while others claiming that it is inhibitory. This study used adult zebrafish to assesses the effect red wine, grape juice and resveratrol on growth and wound healing.

Method: Using zebrafish growth was assessed via the regeneration of the caudal fin (CF). For this, the CF of adult zebrafish was amputated and the fish were subjected to treatments with different concentrations of alcohol, grape juice (GJ), resveratrol, red wine and combinations of alcohol and grape juice (A+GJ) or resveratrol (A+RV). 1-hour treatments were done 3 times daily with a 1-hour recovery period in-between treatments for 14 days. After 14 days, the growth of the CF was assessed using Fiji ImageJ.

Results: Treatment with grape juice, alcohol, and red wine led to significant reductions in CF regeneration in a concentration dependent manner when compared to untreated fish. A+GJ resulted in increases in regeneration compared to GJ but the regeneration observed was still lower than that seen in untreated fish. Resveratrol treated fish showed higher CF regeneration when compared to the control. There was high degree of toxicity observed in the A+RV treatments when high concentrations of resveratrol were used, however, lower doses led to reductions in CF regeneration.

Conclusion: The inhibition of growth seen in red wine and GJ may not solely due to resveratrol but the interaction of resveratrol with the other components of GJ and/or alcohol.

Keywords: Growth, Red wine, Grapes, Alcohol, Zebrafish

(P – 13)

Title: Evaluation of the anti-inflammatory properties of the bark of *Colubrina elliptica* on acute inflammation in the hind paw oedema model

Abstract

Background: The bark of the *Colubrina elliptica* (Sw.) Briz. & Stern plant is used traditionally in Caribbean history for its various therapeutic benefits, such as its anti-rheumatic activity. Therefore, this study sought to investigate the possible anti-inflammatory effects of the bark of *Colubrina elliptica* in an animal model.

Objective: To investigate the anti-inflammatory activity of the ethanol and ethyl acetate extracts of the bark of *Colubrina elliptica* using a carrageenan induced inflammatory model.

Method: Five groups containing six rats each were administered their respective treatment intraperitoneally, followed by an injection of carrageenan into the hind paw. A plethysmometer was used to measure the paw volumes at 30-minute intervals for a duration of 4 hours. The data was analyzed using Analysis of Variance followed by the post hoc Tukey's test for multiple comparisons.

Results: The results from the ANOVA analysis showed that there was a highly significant difference between the groups from the 60 minute interval and beyond ($p < 0.01$). The results from the Tukey test showed that the significant difference occurred between the ethanol extract and water control group at and after 60 minutes ($p < 0.01$). The ethyl acetate extract group showed no significant difference when compared to the oil control group.

Conclusion: The ethanol extract from the bark of *Colubrina elliptica* has significant anti-inflammatory properties.

Keywords: *Colubrina elliptica*, Bark, ethanol extract, ethyl acetate extract

(P – 14)

Vancomycin Induced Pancytopenia

M Palmer

Background: Pancytopenia is one of the most serious adverse drug reactions of Vancomycin. This occurs when the cell counts for all the blood cells fall below their normal values.

Vancomycin is most commonly used to treat methicillin resistant *Staphylococcus aureus*.

Objectives: The aim of this research is to use peer-reviewed case reports to determine the association between Vancomycin and pancytopenia, analyze literature reviews to find information that support this association and to ascertain whether there are additional factors from the case report that characterize the nature of the adverse reaction. **Methods:** A literature search was used to find case reports on “PubMed” using the terms “Vancomycin”, “Pancytopenia” and “case report.” Thirteen articles were found, but only one was used, as it was the only English case study published between 2013-2018. “PubMed” was also used to find articles that provided possible mechanisms through which Vancomycin induces pancytopenia.

Results: Based on the articles found in the literature review, Vancomycin is a probable cause of pancytopenia and Vancomycin induced pancytopenia occurs by means of immune and non-immune mechanisms. The immune mechanism refers to the action of Vancomycin dependent antibodies that destroy mature platelets and neutrophils, while the non-immune mechanism refers to bone marrow hypoplasia which causes a reduction in the number of myeloid and granulocyte precursors. No additional factors were found that characterized the nature of the adverse drug reaction. **Conclusions:** Vancomycin induces pancytopenia and this can worsen a patient’s clinical course.

(P – 15)

Title: Evaluation of BOX-A1R-based repetitive extragenic palindromic PCR in the genetic characterization and distinction of Actinomycetes from soil in Jamaica

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Keywords: BOX-PCR; Actinomycetes; Genetic characterization

Background: Throughout scientific history, the Actinomycetes have gained a lot of attention due to their biotechnological applications across many fields. The molecular characterization of this group of bacteria is done to reveal several genomic data that allows researchers to fully understand their potential.

Materials/Methods: In this study, 86 actinomycetes isolates from soil taken from 5 different parishes in Jamaica were characterized using BOX-PCR. Different PCR parameters and conditions were employed to achieve amplification of the selected actinomycetes isolates. The bacteria were cultured, and genomic DNA was extracted using the boiling lysis method and was used as the template DNA for the BOX-PCR. A gel analysis image software was used in the analysis of the banding patterns.

Results: The results showed that 86 distinct banding patterns were established with a few variations. From the constructed dendrogram using the gel analysis image software, 4 distinct clusters were organized. The dendrogram indicated that majority of the isolates in this study were highly diverse and genetically heterogeneous. Of the 86 isolates examined, there were two only bacteria that had similar banding patterns, however, one of these isolates had an extra band, which concludes that the isolates overall have a different DNA fingerprint.

Conclusion: In conclusion, this differentiation power allows scientists to filter out the most genetically diverse isolates in any study that requires bacterial characterization. Further work is needed to fully characterize these isolates at this level, but BOX-PCR analysis provides a strong foundation for this type of work.

(P – 16)

Environmental Enrichment Paired with Virgin Coconut Oil Supplementation Improves Learning and Memory in Adolescent Swiss Albino Mice

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Background: Environmental enrichment (EE) improves learning and involves physical and social stimulation. There are also claims that dietary supplementation with virgin coconut oil (VCO) improves cognitive decline.

Aim: This study examined the combined effects of VCO supplementation and EE in a mouse model utilizing a discriminative avoidance learning paradigm.

Method: Twelve 1-month old Swiss albino female mice were randomly divided into a standard housing (SE) group (n=6) and an enriched housing (EE) group (n=6). Standard plastic cages were lined with pine shavings. The EE was a large plastic cage with pine shavings to facilitate burrowing, a running wheel and toys. Each mouse was fed 0.1 mg standard rat chow with 0.1 ml VCO added, and exposed to a single trial plus-maze discriminatory avoidance task. Acquisition was tested by recording the number of entries and time spent in the enclosed arm of the maze (AEA) made aversive by the onset of light and noise as the mouse attempted to explore the AEA. Memory retrieval was tested 24 h later using entries and time spent in the AEA on a second 10-min exploration of the maze, in the absence of aversive stimuli.

Results: Both groups spent significantly less time and made less entries to AEA ($p < 0.05$) in the first test session. However, the EE group exhibited early acquisition of the avoidance task and increased time spent in the enclosed arm on subsequent test sessions, demonstrating true learning, and not indiscriminate avoidance.

Conclusion: EE paired with VCO supplementation improved cognition in an avoidance learning task.

Protein Profile of *Bacillus thuringiensis* (Bt.) isolated from Jamaican Soil

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Introduction: *Bacillus thuringiensis* (Bt.) is an aerobic, gram positive, spore-forming bacteria that is primarily characterized by its ability to produce proteins which are toxic to various insect orders. These proteins are expressed during the sporulation phase of the growth cycle. This study sought to isolate and characterize *Bt.* from Jamaica, to examine and evaluate proteins produced by the isolates.

Method: *Bacillus thuringiensis* was isolated using the acetate selection method (Travers et. al, 1988). Pure isolates were cultured in a step up fermentation. Identification of Bt. was carried out based on the colony morphology, gram staining and phase contrast microscopy. The protein quantification was carried out using the Bradford determination method. Further protein profiling was done with 10% SDS-Page. The protein patterns were analyzed with GelJ software and the Jaccard's Coefficient similarity index and a dendrogram was constructed using the unweighted pair group arithmetic average (UPGMA) cluster analysis based on the similarity matrix. The toxicity of the crude protein was evaluated against corn earworm (*Helicoverpa zea*) a lepidopteran pest.

Results: One hundred strains of *Bt.* were isolated and identified via phase contrast microscopy. Twenty-one different combinations of parasporal morphology were observed among isolates. The parasporal conformations included; amorphous, bipyramidal, cuboidal, round, rectangular and hourglass. Protein profile of the Jamaican isolates revealed the presence of proteins ranging from 18 to 234 kDa. From the UPGMA cluster analysis the isolates were grouped into 7 categories. All isolates in group G and F were toxic when tested against corn earworm. Isolates in group G had amplification of the *cyt* and *cry2* gene while isolates in group F had a single *cry* gene profile.

Conclusion: Protein profiling by SDS Page is a useful tool in the grouping of *Bt.* isolates and predicting potential toxicity. Jamaican *Bt.* shows a greatly potential in the management of corn earworm pest.

(P – 18)

A Quantitative Analysis of the Cornus Ammonis of the Hippocampal Formation in Control and Seizure Induced Sprague Dawley Rats

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Abstract

Morphometry is an essential tool to study brain and its changes during development, aging, learning and diseases. This method can help to quantitatively assess the changes that take place in the different areas of the brain (i.e., neural loss, neuroinflammation). For neurodegenerative diseases such as Alzheimer's, and Parkinson's diseases, as well as in epilepsy, morphometry is essential in quantifying changes taking place within the brain (i.e., the loss of neurons during temporal lobe epilepsy).

Objective

The present research seeks to quantitatively assess the changes occurring in the cornu ammonis (CA) region of the hippocampus during experimental seizures. It also compares the use of different software in carrying out histo-morphometric analysis in the brains of rat.

Method

The study was approved by the Ethical Committee of the University of the West Indies, Mona Campus, Jamaica. Kainic acid-induced seizures were generated in Sprague Dawley rats. Rats presenting with at least a stage four seizure (classification of Racine) were sacrificed seven days after the seizure. The animals were euthanized using pentobarbital before perfusion with formaldehyde. The brains of the rats were harvested and serial coronal sections were stained with Nissl staining. These sections were digitized and two different softwares, Image J and QuPath, were used to assess the changes that occurred in the brain.

Results and Conclusion

These results were compared to the data measured in controls. We found that both softwares were effective in assessing the neuronal loss in the brain with no major difference in the results obtained. However, Image J appeared easier to handle and more user friendly, therefore it was chosen to complete the assessment. There was a significant loss of neurons in the hippocampus of the animals with kainic acid-induced seizures, more particularly in the areas CA1 and CA3. This study emphasizes the role of morphometry in assessing neuronal loss in experimental seizures. It can be an important tool in evaluating therapeutic approaches in this context.

Sexual Dimorphism of the Hard Palate in the Afro-Caribbean Skull

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Introduction

Determination of sex is the first stage of identification of human remains in forensic anthropology and is an integral part of post mortem examination. Anthropological methods of identification offer a simple cost-effective relatively reliable and accurate form of determination of sex. When faced with remains where the soft tissue may be lost or carbonized, trauma or advanced stages of decomposition, resulting in partial or full skeletal, the anthropologist becomes critical to the identification of the victim through determination of sex, stature and age in medico-legal cases.

Objectives

The objective of the research was to collect baseline measurements of the palatal length and breadth to calculate the average palate size and maxillo-alveolar index in Afro-Caribbean skulls.

Methods

Morphometric data was collected from 18 dry skulls within the collection of Anatomical specimens in the Basic Medical Science Department, Faculty of Medical Sciences at the University of the West Indies. The study included 11 males and 7 females between the ages of 40 to 70 years, they were identified as free of deformity, damage and fully ossified. Measurements were taken of the interpalatal distance following standard palatine landmarks with emphasis of the incisive canal using digital callipers. With these results we were able to determine maxilla-alveolar breadth, maxillo-alveolar length and external palate breadth. The values were then used in the calculation of maxillo-alveolar index and size of palate, using formulas from Sumati and Phatak (2012)

No ethical approval was needed, in consultation with the University of the West Indies Ethics Committee, as previous approval had been given for the use of these specimens in research.

Results

The size of the palate 39.007 ± 3.062 mm (males) and 35.192 ± 4.197 mm (female) was the only variable found to demonstrate sexual dimorphism according to the Wilcoxon Rank Sum Test ($p < 0.05$). No statistical difference was observed for the maxillo-alveolar index. This study had a low sample size which had to be taken into account when analyzing the data.

Conclusion

The size of palate calculation in males showed the only statistical differences between the sexes, with females demonstrating a smaller palate. This univariate analysis of the crania would not be recommended for sexual dimorphism as the hard palate does not show enough statistical difference to sex. Additional morphometric data is needed to produce an overall baseline average for the Caribbean population cranial landmarks.