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**COLOMBO, SRI LANKA**



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87/23A, Kohila Kotuwa Road, Neelammahara,

Maharagama, Colombo, Sri Lanka

Tel: +94-112-849-268 / Fax: +94-112-849-426

Mobile: +94-773-940-838 / +94-715-279-696

For Registration: [registration@gariteam.com](mailto:registration@gariteam.com)

For Help: [helpdesk@gariteam.com](mailto:helpdesk@gariteam.com)

Whatsapp / Viber: +94-773-940-838

Skype: gari.conference

Web: <http://globalacademicresearchinstitute.com>

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Tele: +94-112-849-268

Fax: +94-112-849-426

Mob: +94-773-940-838 / +94-715-279-696

## **PREFACE**

Global Academic Research Institute proudly presents GARI RESEARCH CONFERENCE 2016 under that 03 Major conferences. 02<sup>nd</sup> International Conference on Health and Medicine, International Conference on Non Communicable Diseases and International Conference on Ayurveda Traditional Medicine and Medicinal Plants are a continuation of a series of successful research symposia. The Inaugural Session and the Technical Sessions were conducted on 16<sup>th</sup> December 2016 @ Galle Face Hotel, Colombo, Sri Lanka. The conferences were organized under main subjects of Health and Medicine, Non Communicable Diseases and Ayurveda Traditional Medicine and Medicinal Plants which empirical, conceptual and methodological papers were received from academics, practitioners and public policy makers were accepted paying austere attention to the academic standards of the papers. To maintain consistency, authors were prescribed to follow the academic writing format of the GARI Publishers. The reviewing process was apparently transparent where papers underwent a double blinded review process by eminent subject specialists in respective areas. Thus referred full papers selected to be presented at the conference were published here. We do not assume any responsibility for any errors or omissions in the research papers which rests solely with the authors.

Special thank goes to an enlightening key note addresses was delivered as well as chaired by Prof. Narendra Babu Ankem (Chalapathi Institute of Pharmaceutical Sciences, India), Dr. Nilani Packianathan (JSS College of Pharmacy, India), Dr. P. Kamal Perera (Institute of Indigenous Medicine, University of Colombo), Dr. Nagalinga Varnakulenthiren (Tamil university, Tamilnadu, India), Mr. Thilak Kandegama (Managing Director, Seehela Nature Farm, Sri Lanka), Dr. Mili Sarkar (Ghalib Hospital, Afghanistan). The organizing committee specially thanks to our Journal Publications GARI Publishers and all the scientific reviewers. Further the support given by Sri Lankan Air-lines as our official International Air-line partner and Cinnamon Air as official Domestic Airline Partner, Oxford Business Group and Sri Lanka Convention Bureau, Medobal, Promotion partner. The conference committee expresses deep gratitude to the panel of reviewers for the priceless service rendered. Finally the committee extends sincere thanks to the presenters and participants for the valuable contribution and active participation.

Conference Committee  
GARI RESEARCH CONFERENCE 2016

## **ABOUT SRI LANKA**

This is an island of magical proportions, once known as Serendib, Taprobane, the Pearl of the Indian Ocean, and Ceylon. Set in the Indian Ocean in South Asia, the tropical island nation of Sri Lanka has a history dating back to the birth of time. It is a place where the original soul of Buddhism still flourishes and where nature's beauty remains abundant and un-spoilt. Few places in the world can offer the traveler such a remarkable combination of stunning landscapes, pristine beaches, captivating cultural heritage and unique experiences within such a compact location. Within a mere area of 65,610 kilometers lie 8 UNESCO World Heritage Sites, 1,330 kilometers of coastline - much of it pristine beach - 15 national parks showcasing an abundance of wildlife, nearly 500,000 acres of lush tea estates, 250 acres of botanical gardens, 350 waterfalls, 25,000 water bodies, to a culture that extends back to over 2,500 years. Sri Lankan cinnamon, ivory and gems had been the main cause for invasion of two nations, Portuguese and Dutch, who followed the Moor traders to the country in search of the world's best spices and riches. According to the Dutch, who reorganized the cultivation and marketing of cinnamon in Sri Lanka, the 'shores of Sri Lanka had been full of it, that you can smell it eight leagues out to sea'. Even today the country produces the world best cinnamon and one of the world's top cinnamon exporters. With Endless beaches, timeless ruins, welcoming people, herds of elephants, killer surf, cheap prices, fun trains, famous tea, flavorful food, newly gained peace and improved infrastructure Sri Lanka had been repeatedly named the next tourist destination worth all the investments. Meanwhile Sri Lanka is fast gaining popularity in the MICE tourism industry, with 11% of the total visitors coming into the country representing the segment, while the industry anticipates the arrival of 240,000 MICE tourists by 2016, which is nearly 10% of the 2.5 million tourist target. With more than one million tourist arrivals in 2012 the Sri Lankan tourism service providers has set a target of 22,500 rooms in the next five years when tourist arrivals are expected to reach 2.5 million.

Discover Refreshingly Sri Lanka!

## **About GARI Research Conference 2016**

The wealth of knowledge acquired by an individual after studying particular subject matters or experiencing life lessons that provide an understanding of something and Education requires instruction of some sort from an individual or composed literature. 02nd International Conference on Health and Medicine, International Conference on Ayurveda, Traditional Medicine & Medicinal Plants, International Conference on Non Communicable Diseases, those are a continuation of a series of successful research symposium. The Inaugural Session and the Technical Sessions were conducted on 16<sup>th</sup> December 2016 @ Gall Face Hotel, Colombo, Sri Lanka. The conferences were organized into main subjects Health, Medicine, Ayurveda, and Traditional Medicine & Medicinal Plants also Non Communicable Diseases which empirical, conceptual and methodological papers were received from academics, practitioners and public policy makers were accepted paying austere attention to the academic standards of the papers.

Conferences planned teaching / learning experience that uses a wide spectrum of technologies to reach learners at a distance and is designed to encourage learner interaction and certification of learning. During recent years, Education field is undergoing with lot of changes due to the evolutions of network technology. It has influenced on the patterns of learning, teaching & education without the limitation of time and space. With the complexity of peoples' life, the time source has become the most scare resource & the space has become the one of the restriction for the traditional education & learning pattern. All full paper submissions will be peer reviewed and evaluated based on originality, technical and /or research content / depth, correctness, relevance to conference, contributions, and readability. The full paper submissions will be chosen based on technical merit, interest, applicability, and how well they fit a coherent and balanced technical program.

We look forward to seeing you in Colombo!

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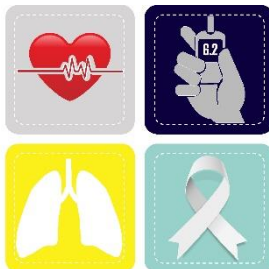
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02<sup>ND</sup> INTERNATIONAL CONFERENCE ON HEALTH AND MEDICINE  
INTERNATIONAL CONFERENCE ON AYURVEDA, TRADITIONAL MEDICINE  
& MEDICINAL PLANTS  
INTERNATIONAL CONFERENCE ON NON COMMUNICABLE DISEASES



International Conference  
on Ayurveda,  
Traditional Medicine  
and Medicinal Plant



International Conference  
on Non Communicable  
Diseases

**KEY NOTE SPEAKERS / TITLE**

Dr. Pathirage Kamal Perera

(Institute of Indigenous Medicine, University of Colombo)

Current Status of Clinical Trials on Traditional Medicine in Sri Lanka

Dr. Mili Sarkar

(IVF Expert/ Consultant, Ghalib Hospital, Afghanistan)

Infertility: A Global Health Problem

Prof. Narendra Babu Ankem

(Chalapathi Institute of Pharmaceutical Sciences, India)

Non Communicable Diseases: Insights and Initiatives

## **WITHAFERIN A INDUCES NRF2-DEPENDENT PROTECTION AGAINST LIVER INJURY: ROLE OF KEAP1 INDEPENDENT MECHANISMS**

<sup>1</sup>Dushani L. Palliyaguru, <sup>2</sup>Dionysios V. Chartoumpekis, <sup>3</sup>Nobunao Wakabayashi,  
<sup>4</sup>John J. Skoko, <sup>5</sup>Yoko Yagishita, Shivendra, <sup>6</sup>V. Singh, <sup>7</sup>Thomas W. Kensler  
*University of Pittsburgh, USA.*

<sup>1</sup>*dlp46@pitt.edu*

### **ABSTRACT**

Small molecules of plant origin offer presumptively safe opportunities to prevent carcinogenesis, mutagenesis and other forms of toxicity in humans. However, the mechanisms of action of such plant-based agents remain largely unknown. In recent years the stress responsive transcription factor Nrf2 has been validated as a target for disease chemoprevention against liver toxicity caused by environmental/dietary factors, cancer, diabetes, obesity, sickle cell disease as well as chronic neurological conditions. *Withania somnifera* (WS) is a herb used in Ayurveda (an ancient form of medicine in South Asia). In the recent past, withanolides isolated from WS, such as Withaferin A (WA) have been demonstrated to be preventive and therapeutic against multiple non-communicable diseases in experimental models. The goals of this study are to evaluate withanolides such as WA as well as *Withania somnifera* root extract as inducers of Nrf2 signaling, to probe the underlying signaling mechanism of WA and to determine whether prevention of acetaminophen (APAP)-induced hepatic toxicity in mice by WA occurs in an Nrf2 dependent manner. We observed that WA profoundly protects wild-type mice but not Nrf2 disrupted mice against APAP hepatotoxicity. WA is a potent inducer of Nrf2-dependent cytoprotective enzyme expression both in vivo and in vitro. Unexpectedly, WA induces Nrf2 signaling at least in part, in a Keap1-independent, Pten/Pi3k/Akt-dependent manner in comparison to prototypical Nrf2 inducers, sulforaphane and CDDO-Im. The identification of WA as an Nrf2 inducer that can signal through a non-canonical, Keap1-independent pathway provides an opportunity to evaluate the role of other regulatory partners of Nrf2 in the dietary and pharmacological induction of Nrf2-mediated cytoprotection leading to prevention of multiple non-communicable diseases.

*Keywords:* Withaferin A, Nrf2, chemoprevention

**DETERMINATION AND COMPARISON OF THE ANTIOXIDANT POTENTIAL  
OF TEA EXTRACTS NATIVE TO SRI LANKA BY MEANS OF TWO  
EXTRACTION PROCEDURES**

<sup>1</sup> Zainab Shiraz Mohamedali, <sup>2</sup> Mathivathani Kandiah

<sup>1,2</sup> *BMS, School of Science, Sri Lanka.*

<sup>1</sup>*zainabshiraz@live.com*, <sup>2</sup>*mkandiah@gmail.com*

**ABSTRACT**

Disease causing processes such as carcinogenesis, atherosclerosis and various other age related illnesses are a result of an imbalance between free radicals and antioxidants. The decline in antioxidant defense mechanisms and rise in free radicals could occur naturally or due to environmental factors. This could be combated by an increase in dietary antioxidants of higher nutritional value. This novel study focuses on the determination and comparison of the antioxidant potential of tea (*Camellia sinensi*) extracts (white, black, green and oolong tea) native to Sri Lanka with the use of methanolic and water extraction methods. The assays carried out included total phenolic content (TPC), total flavonoid content (TFC), total antioxidant capacity (TAC) and the 2, 2'-Azino-bis-3-ethylbenzothiazoline-6-sulfonic acid (ABTS) free radical scavenging assay. The experimental data obtained were statistically analyzed for significant differences between the tea varieties. White and green tea extracts in both methanol and water showed the highest antioxidant capacity as well as the highest radical scavenging activity (RSA) with ABTS. Statistical analysis of  $p < 0.05$  indicated a significant difference between methanol and water extraction in only TPC and TFC. Hence it was concluded that due to different tea processing techniques, white and green tea had the highest TACs and RSAs as well as polyphenols and flavonoids with methanol as a better extraction solvent. Thus the results are indicative of the ability of these tea types to be used as dietary supplements against radical generating diseases.

Keywords: Antioxidants, Dietary supplement, Assay, Free radicals, Extracts

## IMPACT OF ONLINE PHARMACY

<sup>1</sup>Thuhin Nanjappa, <sup>2</sup>Richie Cunningham

<sup>1,2</sup> *The Learning Curve International School, India.*

<sup>1</sup>*thuhinharran@gmail.com*

### **ABSTRACT**

The Food and Drug Administration (FDA) has warned consumers in a lot of occasions on the possible dangers of buying medicines over the Internet. Unauthorized websites selling drugs may not be safe to use and could leave health at risk instead of treatment. FDA sensitises consumers to contact recognized legal Internet pharmacy and to buy medicines online safely. Buying prescription and over-the-counter drugs on the Internet from a company that is unknown means putting oneself in to risk .There are many websites that operate legally and offer convenience, privacy, and safeguards for purchasing medicines. Although there are also many websites that offer to sell potentially dangerous drugs that have not been checked for safety or effectiveness. These sites often sell unapproved drugs, drugs that contain the wrong or no active ingredient or drugs that contain dangerous ingredients. Other websites sell counterfeit drugs that may look exactly like real FDA-approved medicines, but with unknown quality and safety. They continues to proactively protect consumers from counterfeit drugs. They are also exploring the use of modern technologies and other measures that will make it more difficult for counterfeit drugs to get mixed up with, or deliberately substituted for, safe and effective medicines. The agency is working with drug manufacturers, wholesalers, and retailers to identify and prevent counterfeit drugs. This paper is expected to gain attention of Government regulators, policy makers, and the media. This paper describes the nature of the problem and its magnitude, discusses the challenges to Government and private efforts to combat illegitimate online pharmacies, and outlines strategies to minimize the availability of these medications on the Internet.

*Key words: Internet pharmacy, unauthorized websites, medicines online.*

## DETERMINATION OF THE ANTIOXIDANT POTENTIAL OF BANANA PEELS, NATIVE TO SRI LANKA

<sup>1</sup>Muzaina Iqbal, <sup>2</sup>Mathivathani Kandiah

<sup>1,2</sup>*BMS, School of Science, Sri Lanka.*

<sup>1</sup>*muzaina\_979@hotmail.com, <sup>2</sup>mkandiah@gmail.com*

### **ABSTRACT**

The homeostasis between free radicals and antioxidant defense mechanisms is constantly disturbed, either naturally or by the exposure to environmental factors, giving rise to pathologic states like cancer, atherosclerosis, arthritis and age-related disorders. The need for the introduction of exogenous antioxidants in the diet is an imperative requirement as it would result in higher nutritional value. This novel study focuses on the determination and comparison of antioxidant potential of banana peel extracts in their ripe and unripe stages of fruit development, native to Sri Lanka, *Musa Sapientum* species (Kolikuttu–Silk, Ambul–Mysore, Seeni kesel –Pisang Awak, and Ambun - Cavendish). Methanolic extracts of banana peels were subjected to ABTS free-radical scavenging assay, total antioxidant capacity assay (TAC), total phenolic content (TPC) and total flavanoid content (TFC) to determine the antioxidant potentials. The experimental data obtained were statistically analyzed for determining the significant differences between the two stages for each assay. The banana peel extracts of all four varieties, at the ripe and unripe stages portrayed reasonable antioxidant capacities and phytochemical content where Kolikuttu peel extracts showed the highest levels of ABTS scavenging activity, TAC, TPC and TFC, followed by Ambun, Seeni and Ambul, in varying patterns with less or no significant differences. The results obtained are suggestive of the high capacity of banana peel extracts to aid in the prevention and treatment of free radical-mediated diseases.

*Keywords: Antioxidants, Dietary supplement, Assay, Free radicals, Extracts*

**DETERMINATION OF PREBIOTIC CARBOHYDRATES AND *IN VIVO*  
PREBIOTIC EFFECT OF PUMPKIN (*CUCURBITA MAXIMA*) GROWN IN SRI  
LANKA**

<sup>1</sup>S.L.G. Madushani, <sup>2</sup>J.K. Vidanarachchi, <sup>3</sup>P. Thavarajah, <sup>4</sup>D. Thavarajah, <sup>5</sup>S. Basnagala,  
<sup>6</sup>S.Niroshan, <sup>7</sup>B.A.N.K. Balasooriya, <sup>8</sup>J. Alwis, <sup>9</sup>R. Liyanage

<sup>1, 2</sup>University of Peradeniya, <sup>7, 8</sup> Makandura Regional Agricultural Research & Development  
Centre, <sup>9</sup> Institute of Fundamental Studies, Sri Lanka.

<sup>3, 4, 5, 6</sup> Clemson University, USA.

<sup>1</sup> lgmadu@gmail.com, <sup>2</sup> janakvid@pdn.ac.lk

**ABSTRACT**

The concentrations of prebiotic carbohydrates (PC) of the pulps of two local pumpkin varieties (Villachchi, Moragollagama) and five imported hybrid varieties (Arjuna, Suprima, Abishek, Lara, Pragathi) grown in Sri Lanka were analysed. Prebiotic activity of Villachchi variety was evaluated *in vivo* using the pig as model animal. Pigs were fed with four different diets as standard diet (SD), pumpkin powder incorporated SD (PD), SD with probiotic, and PD with probiotic. Freeze dried *Bifidobacterium animalis* Subsp. *lactis* (500 mg/day) and *Lactobacillus acidophilus* (500 mg/day) were used as probiotic organisms. Faecal microbial composition was analysed at the end of the experimental period. Mean concentrations of glucose, fructose, sucrose, sorbitol, mannitol, stachyose+raffinose, verbastose+kestose and nystose of pumpkin pulp were 2253.3, 3313.5, 1115.3, 106.7, 41.4, 76.5, 294.5, and 37.5 mg/100g dry matter, respectively. Arjuna variety showed significantly higher concentration of sucrose than the other varieties. Sorbitol, mannitol, and verbastose+kestose were highest in pulp of Villachchi variety. Faecal lactic acid bacteria (LAB) and bifidobacteria (BB) counts were higher ( $P < 0.05$ ) in PD with and without probiotic fed groups than those fed with SD. The highest LAB and BB counts were found in the pigs fed with PD with probiotic. The faecal coliform counts in SD with probiotic and PD with probiotic fed pigs were significantly lower ( $P < 0.05$ ) than counts of SD fed pigs. The current study revealed that pumpkin contains nutritionally important PC and pumpkin powders have potential prebiotic activity upon the growth of the beneficial microorganisms.

*Key words: pumpkin, prebiotic carbohydrates, probiotic, pig, faecal microorganisms*

**THE DETECTION OF MARIJUANA USE IN BIOLOGICAL SAMPLES (BLOOD,  
URINE, ORAL FLUID AND HAIR) USING LIQUID CHROMATOGRAPHY–  
TANDEM MASS SPECTROMETRY (LC–MS/MS)**

<sup>1</sup>Sadiya Marikar, <sup>2</sup>Mathivathani kandiah

<sup>1,2</sup>*BMS, School of Science, Sri Lanka.*

<sup>1</sup>*sadiya\_2311@yahoo.com, <sup>2</sup>mkandiah@gmail.com*

***ABSTRACT***

Marijuana (cannabis) is the most commonly used illicit drug, with the UN office on drugs and crime reporting that in the year 2013, 181.8 million people between the ages of 15-64 years used the drug worldwide. The main psychoactive constituent of marijuana, tetrahydrocannabinol (THC) produces several pharmacological effects on the body including a higher risk of anxiety, depression, cardiovascular complications and lung cancer. It is also the most common illicit drug detected in drivers who have been driving under the influence of drugs (DUID) as it effects their memory and alters their perception of time. Therefore, the detection of THC and its metabolites, together with the use of biological samples which can be collected with minimal invasion and analysed to give accurate results is crucial. LC-MS/MS is a sensitive technique used in forensic toxicology laboratory testing. It provides the advantage of a fast and reliable method for detecting both high and low molecular weight analytes in a complex biological sample, together with the capability of determining conjugated and unconjugated analytes in a single assay. This review aims to raise public awareness of the health risks of marijuana use and provides an overview of using LC-MS/MS for detection of marijuana abuse in different biological samples including urine, blood, oral fluid and hair samples. It highlights the different sample preparation techniques, chromatographic separation methods and modes of acquisition, with reference to the limit of quantitation (LOQ) and limit of detection (LOD) as mentioned in the literature.

*Keywords: Marijuana, LC-MS/MS, Metabolites, Public awareness*



**PREVALENCE OF TYPE II DIABETES MELLITUS IN GUNTUR DISTRICT AND  
CLINICAL PHARMACIST CARE TO DIABETIC PATIENTS. A COMMUNITY  
BASED STUDY**

<sup>1</sup>Palanisamy Sharmila Nirojini, <sup>2</sup>Nadendla Ramarao

<sup>1,2</sup> *Chalapathi Institute of Pharmaceutical Sciences, India.*

<sup>1</sup>*sharmilapractice@gmail.com*

***ABSTRACT***

India is the diabetic capital of the world, the number of diabetes patients is likely to rise to 101 million in India by 2030. Diabetes rarely makes headlines, and yet it will be the world's seventh largest killer by 2030 unless intense and focused efforts are made by governments, communicators and individuals. This study was undertaken to assess the incidence and impact of clinical pharmacist (CPs) role in type II diabetes mellitus. *Methods:* A cross sectional study was carried out in Guntur district in Andhra Pradesh from Sep 2015 to Aug 2016. A total of 705 type 2 diabetic individuals over the age of 25 years were enrolled. 100 among 705 were accepted and divided into two groups control (50) and test (50). Test population were continuously monitored and counseled by CPs. *Results:* Prevalence of diabetes was 14.5% and pre diabetic was 12.4%, prevalence rate more among male compared to female. Better glycaemic control in the test population with a mean difference of -57.18 and p value of < 0.0001. HbA1c levels in the test population with a mean difference of 1.8 and p value of < 0.0001. Predominant improvement in quality of life of test population with a mean difference in QOL percentage score  $32.81 \pm 0.9045$  and p value < 0.0001. There is major increase in medication adherence in the test group by the end of the study with a mean difference of  $4.3 \pm 0.603$  and p value < 0.0001. *Conclusion:* Clinical pharmacist playing main role to improve the quality of life of patient, regular exercises, yoga, meditation and proper diet can control the diabetes.

*Keywords:* Diabetes mellitus, clinical pharmacist, incidence

**ANTIOXIDANT AND TYPE II DIABETES RELATED FUNCTIONAL  
PROPERTIES OF FINGER MILLET (*ELEUSINE CORACANA*) COMPARED TO  
RICE (*ORYZA SATIVA*)**

<sup>1</sup>S.L.G. Madushani, <sup>2</sup>J.K. Vidanarachchi, <sup>3</sup>L.H.M.P.R. Lansakara,

<sup>4</sup>B.C. Jayawardana, <sup>5</sup>R. Liyanage

<sup>1, 2, 3, 4</sup>University of Peradeniya, <sup>5</sup> Institute of Fundamental Studies,

Sri Lanka

**ABSTRACT**

The present study was designed to determine *in vitro* antioxidant activity, alpha amylase inhibitory activity and fermentation ability of Rawana and Oshada finger millet varieties compared to Basmati and BG-300 rice varieties. Total phenolic content (TPC) and total flavonoid content (TFC) were quantified and antioxidant activity was determined using 2, 2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay and 2, 2'-azino-bis-3-ethylbenzothiazoline-6-sulphonic acid (ABTS) cation radical scavenging assay. According to the results, Oshada was characterized by the highest TFC while TFC of Rawana was similar to Basmati and BG-300. TPC of finger millet varieties was higher ( $P < 0.05$ ) than rice varieties and TPC was significantly different among finger millet varieties. Oshada had a higher ( $P < 0.05$ ) TPC than Rawana. The antioxidant activity analysis showed finger millet varieties had a higher ( $P < 0.05$ ) DPPH scavenging activity and ABTS scavenging activity compared to rice varieties. Furthermore, ABTS scavenging activity was higher ( $P < 0.05$ ) in Oshada than Rawana. Alpha amylase inhibitory activity of finger millet varieties was significantly higher than rice varieties, whereas values were not significantly different among finger millet varieties. The  $IC_{50}$  values of finger millet varieties were greater ( $P < 0.05$ ) than acarbose, the drug used to treat type II diabetes. The results of the microbial fermentation study revealed that finger millet varieties produced a higher amount of hydrogen and carbon dioxide compared to rice varieties during the incubation at 39°C with unadapted caecal microflora. In conclusion, this study indicated that finger millet varieties have considerable health related functional properties compared to Basmati and BG-300 rice varieties. Particularly, finger millet variety called Oshada has strong antioxidant effect.

*Key words: Eleusine coracana, Oryza sativa, antioxidant, diabetes, in vitro.*

**DETERMINATION AND EVALUATION OF TOTAL ANTIOXIDANT CAPACITY,  
TOTAL PHENOLIC CONTENT, TOTAL FLAVONOIDS AND THE  
ANTIOXIDANT ACTIVITY OF ANNONA MURICATA AND ANNONA  
SQUAMOSA IN SRI LANKA**

<sup>1</sup>Maryam Abdul Salam, <sup>2</sup>Koshala De Silva, <sup>3</sup>Mathivathani Kandiah

*BMS, School of Science, Sri Lanka.*

<sup>1</sup>*cherishingflower@gmail.com*, <sup>2</sup>*okoshala@yahoo.com*, <sup>3</sup>*mkandiah@gmail.com*

***ABSTRACT***

There is an emerging interest in natural antioxidants as bioactive constituents in plants. Soursop (*Annona muricata*) and sugar apple (*Annona squamosa*) are tropical fruits in Sri Lanka which are less commercially utilised. The antioxidant properties of these fruits have raised global interest to obtain sources of natural antioxidants, which can be used to prevent degenerative diseases caused due to oxidative stress. In this study, the antioxidant potential and the antioxidant activity in methanolic extracts of the peel and pulp of soursop and sugar apple was evaluated using the total antioxidant capacity (TAC), total phenolic content (TPC), total flavonoids and the free radical scavenging 2,2'-azino-bis-3-ethylbenzthiazoline-6-sulphonic acid (ABTS) assay. The results showed the highest antioxidant capacity in the soursop peel extracts compared to the sugar apple peel extracts. Further, the sugar apple pulp had increased antioxidant capacity than the soursop pulp extract. These findings suggested that both, the soursop and sugar apple as a vital source of natural antioxidants in nutritional and pharmaceutical applications.

*Keywords: phenolic content, flavonoids, antioxidant activity*

## PRESCRIBING PATTERN FOR COMMON NEUROLOGICAL DISORDERS

R. Bhavya Raga Deepika, A. Narendra Babu, N. Ramarao

*India*

*Bhavyasweety96@gmail.com*

### **ABSTRACT**

Objective of the research, to determine the prescribing pattern for those common neurological disorders. Method: A prospective, observational, non-interventional, uncontrolled, unicentric, pharmacoepidemiologic study was conducted at neurology department of a multi-specialty hospital. Informed consent and ethical clearance were obtained from the hospital authorities. The patient admission form and discharge summary were the main source of data collection. Prescribing pattern of drugs for the inpatients other than the patient history and medication history were observed and recorded. Age: Most of the neurological problems are seen in the age of 40-59 Gender: Most of the neurological disorders are seen in males than in females. Medication History: The most co-morbid conditions observed in neurological patients are diabetes, hypertension, surgeries (cranioplasty, L4-L5 laminectomy, L3-L4 spinal fixation). Personal History: The most of the neurological problems are reported in married and non-vegetarian patients. Habits: Alcohol was found to be one of the most common reasons for neurological problems. Family History: Hypertension was one of the major complications observed among the family members of neurological patients. Physical Examination: Temperature: The recorded temperature in most of the neurological patients was found to be 98.6<sup>0</sup> F. Pulse Rate: The pulse rate in neurological patients was found to be 78 beats/min. Respiration Rate: The respiration rate in neurological patients was found to be 18/min. Blood Pressure: The blood pressure in the neurological patients was found to be / 70. SpO<sub>2</sub>: The SPO<sub>2</sub> in most of the neurological patients was found to be 97 - 100. Central Nervous System Effects: Level of Consciousness: Most of the patients are in drowsy and conscious states. Speech: Most of the patients did not respond by speech. Conclusion: The present study emphasizes the need for the role of a clinical pharmacist in a hospital to promote health research and public health especially through rational use of drugs.

## A PROSPECTIVE PHARMACOEPIDEMIOLOGICAL STUDY ON COMMON UROLOGICAL DISORDERS

<sup>1</sup>Kommisetty Sasikala, <sup>2</sup>A. Narendra Babu, <sup>3</sup>N. Ramarao  
<sup>1, 2, 3</sup> *Chalapathi Institute of Pharmaceutical Sciences, India.*  
<sup>1</sup>*sasikommisetty@gmail.com*

### **ABSTRACT**

**Objectives:** To determine the prevalence of common urological disorders and determine the prescribing pattern. **Method:** A prospective, observational, non-interventional, uncontrolled, unicentric, pharmacoepidemiologic study was conducted at urology department of a multi-specialty hospital. Informed consent and ethical clearance were obtained from the hospital authorities. The patient admission form and discharge summary were the main source of data collection. Prescribing pattern of drugs for the inpatients other than the patient history and medication history were observed and recorded. **Results and discussion:** **Age:** Most of the urological problems are seen in the age of 20-39. **Gender:** Most of the disorders are seen in males than in females. **Medication history:** The most co-morbid conditions observed are diabetes, hypertension, surgeries (haemorrhoids, hysterectomy, epigastrichernia, urethroplasty, hydrocele surgery) and other medical history include blood transfusion, pneumonia and HBs Ag positive. **Personal history:** The most of the problems are reported in alcoholics, married and non-vegetarian patients. **Family history:** Hypertension was one of the major complications observed among the family members of patients. **Physical examination:** **Temperature:** The recorded temperature in most of them was found to be 98-98.6<sup>0</sup> F. **Pulse rate:** The pulse rate in patients was found to be 80-82 beats/min. **Respiration rate:** The respiration rate in patients was found to be 18/min. **Blood pressure:** The blood pressure in the patients was found to be 120/ 70mm Hg. **SPO<sub>2</sub>:** The SPO<sub>2</sub> in most of the patients was found to be 98%. **Provisional diagnosis:** Most observed urological complications are urethric calculus, benign prostate plasia, renalcalculus and stricture urethra. **Medications:** Most of the medications prescribed for urological patients are Antibiotics, Analgesics, Antacids, Antiamoebics and Anti pyretics. **Conclusion:** The above prospective study gives information regarding prescribing pattern and rational use of medications for different urological disorders.

*Keywords: Pharmacoepidemiology, Urology, Prescribing pattern, rational use of drugs*

## **COPING STRATEGIES MEDIATING THE ROLE OF TYPE A BEHAVIOR IN QUALITY OF LIFE OF HEART PATIENTS**

<sup>1</sup>Sarwat Sultan, <sup>2</sup>Shabbih Fatima, <sup>3</sup>Frasat Kanwal, <sup>4</sup>Sana Khurram

<sup>1, 2</sup>Bahauddin Zakariya University Multan, <sup>3, 4</sup>National College of Business Administration  
& Education, Pakistan

<sup>1</sup>drsarwat@bzu.edu.pk

### **ABSTRACT**

**Objective:** The main objective of the study was to see the moderating effects of coping strategies on caregivers' burden that they incurred while caring the CHD patients. **Methodology:** This exploratory study was completed with 312 caregivers contacted at Cardiology Centre Multan. As the study was of particular importance for examining the significance of coping strategies used by caregivers to cope with their burden during treatment of CHD patients; the gender, age, relationship with recipient, and duration of disease were taken as independent variables. Information about independent variables, coping strategies, and burden were collected using scales; Way of Coping Scale and Zarit Burden Interview Scale respectively. **Results:** The analyses from structure equation model affirmed the moderating roles of different coping strategies. Findings showed that female caregivers used emotion focused strategies and male caregivers used problem focused strategies. Results demonstrated that effects of age, relationship with recipient, and duration of disease were moderated by coping strategies; emotion focused ( $B = .31, p > .01$ ) and problem focused ( $B = .25, p > .01$ ). **Conclusion:** Based upon the statistical analyses, present findings added the literature by affirming the role of caregivers coping ways in dealing with their burden. Effects of caregivers' gender, age, relationship with patient, and duration of CHD are significant and are moderated by coping strategies.

*Keywords: Caregiver Burden, Care-recipient Relationship, Coping Strategies, Coronary Heart Disease*

## **THE EFFECT OF BREAKFAST ON ACADEMIC PERFORMANCE AND BEHAVIOUR IN SCHOOL CHILDREN FROM BATTICALOA DISTRICT**

<sup>1</sup> Sivapatham Vishnukumar, <sup>2</sup>N. Sujirtha, <sup>3</sup>Ramanathan Ramesh

<sup>1,3</sup> *Eastern University*, <sup>2</sup>*University of Peradeniya, Sri Lanka.*

<sup>1</sup>*visnu25@yahoo.com*

### ***ABSTRACT***

Breakfast is considered as the most important meal of the day, yet many people skip breakfast. Studies indicate that school age children who regularly skip breakfast are not likely to concentrate in class, thus affecting school performance. Present study aims at studying the effect of breakfast skipping on the nutritional status and cognition of school going children. An exploratory cross sectional study was undertaken to assess and compare the nutritional status of school going children eating breakfast and those skipping it. Questionnaires were used to collect information on background characteristics and breakfast consumption habits. The 24-hour dietary recall method was used to obtain information on the children's food intake. The total sample size was 195 school going students aged 10-16 years old from the selected schools in Batticaloa district. Chi-square test and t-test were used for statistical analysis using SPSS software. According to the results of the current study, the prevalence of breakfast skipping among school going children of age 10-16 years old is 23.50% in selected areas of Batticaloa district. More number of breakfast skippers were found to be overweight than breakfast non-skippers ( $p = 0.992$ ). However intakes of fat ( $p < 0.05$ ) and miscellaneous foods ( $p < 0.05$ ) like junk food that are high in saturated fat were significantly high in breakfast skippers than breakfast non-skippers. A significant difference was also seen in a no. of parameters like memory ( $p < 0.01$ ), concentration ( $p < 0.01$ ), grades obtained ( $p < 0.01$ ), attendance ( $p < 0.01$ ) etc. between breakfast skippers and breakfast non-skippers. The study indicates that skipping breakfast affects both the nutritional status as well as the school performance of the students. The study strongly favours breakfast plays an important role for adequate nutrition of school children and has a major impact on cognition.

*Keywords: BMI, Breakfast skipping, Cognition, Food groups, Nutritional status.*

## **EFFECTIVENESS OF AN INTERVENTION TO IMPROVE PARENTING**

<sup>1</sup>Saseela Subaskaran, <sup>2</sup>Aindralal Balasuriya

<sup>1</sup>Ministry of Health, <sup>2</sup>General Sir Kotelawala Defence University, Sri Lanka.

<sup>1</sup>saseelasubash@yahoo.com

### ***ABSTRACT***

**Background:** Even though parenting is an inborn trait, the improvements in parents' and children's well-being can be enhanced (Kevin et al 2013). Modes of delivery of education depends on contexts, such as short courses conducted in children centres, schools etc., education by phone, online courses **Objectives:** The aim of the study was to assess the effectiveness of parenting education for parents of 10 year old school children. **Methodology:** It is a quasi-experimental study conducted in Jaffna and Kalutara districts to assess the effectiveness of parenting education for parents of 10 year old school children.

Best matching two schools from each district from distant areas (to avoid contamination) were randomly selected for the intervention and for control. Parenting Education Package consisted workshops for the parents, booklet, audio and video CD. Intervention and control groups had 73 parents from each district. Effectiveness of the intervention was assessed using Parenting Patterns Questionnaire which was developed by the investigator. The scores before and after intervention were compared for any statistically significant difference using SPSS version 15.0 and McNemar's test. **Results:** The intervention for parents has shown improvement in parenting over a 3 month period ( $p < 0.05$ ) in 'Connection', 'Control' dimensions and in 'Overall parenting' in Jaffna district and 'Connection' dimension in Kalutara district, in 3 months' time. **Conclusion:** The intervention is effective to improve parenting practices and it can be used in future also.

*Key words: parenting, parenting interventions, parenting assessment*



## EVALUATION OF THE EFFECTIVENESS AND EFFICACY OF ACUPUNCTURE TREATMENT IN THE MANAGEMENT OF HYPERGLYCEMIA

<sup>1</sup>W. A. I. Pushpamali, <sup>2</sup>S. Hettige

<sup>1</sup>Gampaha Wickkramarachchi Ayurveda Institute, <sup>2</sup>Sir Anton Jayasooriya Memorial  
Hospital, Sri Lanka.

<sup>1</sup>ipushpamali@gmail.com

### **ABSTRACT**

Hyperglycemia or high blood sugar is a condition in which an excessive amount of glucose circulates in the blood plasma. This is generally a blood sugar level higher than 11.1 mmol/l(200 mg/dl), but symptoms may not start to become noticeable until even higher values such as 15–20 mmol/l (~250–300 mg/dl). Acupuncture, which has a history of 400 years, is a method of encouraging the body to promote it's natural healing and improve functions .This is done by inserting satirized, stainless–steel needles that are fine as human hair in to specific points located near or surface of the skin which have the ability to alter various biochemical and physiological conditions in order to treat a wide variety of diseases. Inserting needles at these points stimulates various sensory receptors that, in turn, stimulate nerves that transmit impulses to the hypothalamic-pituitary system at the base of the brain. The aim of this study was to find out the efficacy of Acupuncture treatment on the management of hyperglycemia and improve the attitudes of Acupuncture among the Sri Lankan population. This randomized prospective cohort clinical study was done to evaluate the effect of Acupuncture treatment in consisting of Du 20, Ex 1, SJ 20, L.I. 18, GB 21, L.I.11, L.I 4 managing Hyperglycemic conditions of patients with an Ayurvedic traditional formulation in comparison to the effect of same Ayurveda Decoction. After 3 months treatment, patients of the group A, which received Ayurveda Decoction and Acupuncture treatment showed 54.05% decrease in serum glucose level in comparison to the level of same parameter before the treatment (p<0.05) and the patients of group B, which received Ayurveda Decoction only did show significant reduction in the serum levels of glucose 36.16% (p<0.05) compared to those of before treatment of same group. Considering the overall results of present study and comparing with the results of previous studies, it is evident that the short term administration of Acupuncture treatment has shown significant effect in decreasing the elevated serum glucose level.

*Keywords: Hyperglycemia, Acupuncture Treatment, Ayurveda Decoction.*

# TOWARDS AN INTEGRATION OF UNIVERSITY LANDSCAPES AND PLANT MEDICINE

Emily Sigman

*Yale University, USA*

*emily.sigman@yale.edu*

## **ABSTRACT**

Landscapes hold great power to change, both directly and indirectly, the ways in which people view and interact with the natural world. I argue in this paper that the university campus landscape can be more effectively leveraged in the pursuit of endowing young generations with basic ethnobotanical knowledge and skills, and appreciation for traditional medicine practices like Ayurveda. Specifically, I posit that incorporating medicinal plant gardens into the university campus landscape will (1) offer opportunities for students who are expressly interested in plant medicine to practice their skills, and (2) prime students who otherwise have little interest in medicinal plants to appreciate and support the work of herbal practitioners now and in the future. I support this theory with two case studies from Yale University: (a) a 20-acre medicinal plant landscape that is being incorporated into the nursing school program, and (b) a small courtyard edible and medicinal garden on the main campus that is being incorporated into the forestry school program. The paper concludes that these spaces offer critical opportunities for students to balance their academic knowledge with folk, oral, traditional, and experiential knowledge, and engage with plant medicine in ways that will meaningfully evolve their awareness of personal and environmental health. This meaningful evolution—because of its locus in the university space—will help ensure the cultivation, conservation, and propagation of plant medicine knowledge and use in present and future generations.

*Keywords: Plant Medicine, Traditional Medicine, Holistic Learning, Medicinal Landscapes, Herbalism*

**FOCUSED STUDY OF MANGIFERIN ISOLATED FROM LEAVES OF  
MANGIFERA INDICA ON MYELOID LEUKEMIA ALONG WITH DIFFERENT  
HUMAN CANCER CELL LINES.**

<sup>1</sup>Hemanth Kumar Manikyam, <sup>2</sup>Suman Selvaraju

<sup>1</sup>*Sanskriti Health Care Pvt. Ltd, India*

<sup>1</sup>*phytochem2@gmail.com*

**ABSTRACT**

In different myeloid leukemia cases resistance to diverse treatment regimen owes to multiple molecular mechanisms of cellular network. Epigenetic dysregulation, gene mutations, overexpression of multidrug resistance genes, abnormal immune function, the presence of chemotherapy-resistant leukemia-initiating cells, and aberrant signaling pathways are could be the lead cause of this kind of aberration. Some marketed drug is considered as a first generation drug that can inhibit the enzymatic action by inhibiting the ATP binding with different key pathway regulator protein. Later on, insensitivity of myeloid leukemia cells towards these drugs has been observed may be due to mutation in tyrosine kinase domain of the kinase receptor. By enchanting into account of bioavailability and resistance developed, there is an extreme need to find some natural and nature derived inhibitors for the kinase proteins of different key metabolic pathways. For computational screening and in vitro studies against cancer cell lines and marker proteins, Mangiferin and Euxanthic acid isolated from leaves of *Mangifera indica* had been used as mentioned in Ayurveda/ Indian Traditional Medicine (ITM). Docking analysis was also carried out on the active site of different tyrosine kinase receptor with reported reference inhibitors. A series of in vitro tests were done to validate the stability of the system. The anti-proliferative effect of Mangiferin as tested and was found to inducing cell death with IC-50 values 149 $\mu$ g/ml in K-562 and 297 $\mu$ g/ml in Jurkat cells respectively. Considering the above said parameters proposed Mangiferin molecule is concluded as potential lead for drug designing pipeline against myeloid leukemia.

*Keywords: Tyrosine Kinase; Mangiferin, Ayurveda Shastra, Indian Traditional Medicine (ITM), Leukemia.*

## EFFECT OF AN AYURVEDIC HERBAL FORMULATION ON MALE FERTILITY

<sup>1</sup>L.Ganesan, <sup>2</sup>M. M. D. Nayani, <sup>3</sup>M. M. M. Shakir

<sup>4</sup>R.A.R.P.Susantha, <sup>5</sup>D. M. S. Fernando, <sup>6</sup>G. U. S. Wijesekara

*University of Sri Jayewardenepura, Sri Lanka*

<sup>1</sup>lukxanaa@gmail.com, <sup>6</sup>udaya\_wije@yahoo.com

### ABSTRACT

Male infertility is rising at an alarming rate. Ayurveda has claimed there are plants that can be used to treat male infertility, even for idiopathic cases. The objective of the study is to describe the effect of an ayurvedic herbal formulation on male infertility which consists of plants *Withania somnifera* (Amukkara), *Orchis mascula*, *Mucuna pruriens* (Vanduru ma), *Tribulus terrestris* (Heen nerenchi), *Asparagus racemosus* (Hathavariya), *Asparagus adscendens*, *Anacyclus pyrethrum* (Akrapatra) and *Myristica fragrans* (Sadikka). Infertile subjects (n=68) attended to Nugegoda Ayurvedic clinic were treated with herbal formulation for three months. Seminal fluid samples were collected and analyzed at baseline (pretreatment) and first, second and third months on medication. Comparisons of the sperm concentration, total motility, progressive motility and semen volume between pretreatment and post treatment were done by paired T test. The percentage of increase in sperm concentration, total motility, progressive motility and semen volume at the end of 3<sup>rd</sup> month were 88.47%, 63.94%, 78.41% and 4.18% respectively. Positive correlations were found in sperm concentration (r=0.45), total motility (r=0.42) and progressive motility (r=0.53) between pretreatment and post treatment and a highly significant increase was observed in all above semen parameters (p=0.001) except semen volume following treatment for 3 months. Further, findings indicated a highly significant improvement (p=0.001) in sperm concentration, total motility and progressive motility of the treated oligozoospermic (n=54), asthenozoospermic (n=64) and oligoasthenozoospermic (n=50) groups. In conclusion, the herbal formulation has a positive effect on sperm concentration, total motility and progressive motility in oligozoospermic, asthenozoospermic and oligoasthenozoospermic.

*Key words- Infertility, Herbal formulation, Seminal fluid.*

# **KNOWLEDGE AND ATTITUDES OF NURSES IN AYURVEDA HOSPITALS ON FISTULA IN ANO**

*W.A.I. Pushpamali*

*Gampaha Wickramarachchi Ayurveda Institute, Sri Lanka*

*ipushpamali@gmail.com*

## **ABSTRACT**

As nurses play a key role in wound care, their knowledge and attitudes are vital in providing an optimum service to fistula in ano patients. Fistula in ano, although a self-limiting condition, is a course of considerable morbidity and social embarrassment. The chief problems include frequent recurrences and need for prolonged hospitalization. The purpose of this study was to assess the knowledge and attitudes of nurses who are working at Ayurveda Hospitals. In this study 100 registered nurses were invited to complete a pre-tested, self-administered questionnaire. Response rate was 100% and majority of nurses were females. Overall knowledge score was  $77.9 \pm 5.9$  and the knowledge scores were satisfactory on fistula in ano  $72.6 \pm 5.2$ , complications of ulcers  $34.2 \pm 6.4$ . Statistically significant associations were seen between nurses overall knowledge score and the years of experience as a nurse ( $p < 0.05$ ). There was no significant difference in knowledge and attitudes of nurses in five hospitals studied. The sub optimal knowledge of nurses on fistula in ano may be attributed to the lack of specific training and wound care in majority of them. The duration of exposure to wound care was shown to be the most important feature associated with the knowledge of nurses which in turn influenced their interest in providing optimum care to patients who has fistula in ano.

*Key words: Nurses, Fistula in ano patients, Knowledge and attitudes*

# EVALUATION OF THERAPEUTIC EFFECT OF TRIPALA KATAKAN PATA DECOCTION AND ASSESSING THE QUALITY OF LIFE AMONG DIABETES MELLITUS

<sup>1</sup>A.M.H.S. Attanayake, R. Mendis, <sup>2</sup>C.P. Kahingalage, <sup>3</sup>H.I.B.S.D. Hewawasam,

<sup>4</sup>R. Thiranagama, <sup>5</sup>W. Kumbukgolla

<sup>1</sup>Bandaranaike Memorial Ayurveda Research Institute, Sri Lanka

harshamed@yahoo.com

## ABSTRACT

Diabetes mellitus (DM) is a chronic metabolic disorder of hyperglycemia. It is relationship with insulin deficiency and resistance or both. It has greatly affects the health, quality of life, and life expectancy of affected individuals. Main objective of this study was to assess the anti-hyperglycemic effect and adverse effects of *tripala kataka pata* (TKP), an oral hypoglycemic formula. In addition to analyze the improvement of quality of life in the selected group was also objective of this study. This formula is being commonly used in all Ayurveda hospitals in Sri Lanka. Forty (46) volunteer Patients were randomly selected from the diabetic clinic of the Bandaranaike Memorial Ayurveda Research Institute (BMARI). They were given TKP twice a day and followed up for six months and were observed for Fasting Blood Sugar (FBS), HbA1C, SGOT, SGPT and serum creatinine (SC). The SF-36 questionnaire used as a health survey tool to measure the quality of life (QOL) among selected diabetic patients. According to the response of the patients for the drug group was divided in to the two groups of good responded and bad responded for the drug according to the improvement of the glycaemic levels. Data analysis was done by paired t-test and wilcoxon sign ranked test using SAS software 9.1 versions. Good responded group consist of Thirty eight number of patients and the mean value of the HbA1c before treatment was 7.18 %, following after six months it was significantly reduced to 6.39% (p=0.001) although the desired level of HbA1c is 5.7-6.4 %. Mean value of the FBS before treatment was 181.4±8.34 mg/dl and after four months it was reduced to 142.63±8.99 mg/dl. There was a significant decrease of mean FBS (p=0.003). However, the expected FBS level in optimal glycaemic control is <112 mg/dl and 39% of patients were reduced FBS level in to the level of optimal glycaemic level. Non responded group was included eight patients and mean value of the FBS level increased to 130.95±12.5 mg/dl to 138.62±11.2 mg/dl. Mean value of the HbA1c level increased 6.78% to 7.5 %. Other parameters such as SGOT, SGPT and SC were within the normal range and remained as they were for six months in both two groups. Regarding the patients recruited for the study (46), there was a significant (p<0.01) difference between the pretreatment (73) and post treatment (109) QOL scores. Areas assessed by the SF 36 QOL questionnaire greater statistical significance was observed in areas of General health (p<0.01), Energy and emotions (p<0.01), physical and emotional health problems (p<0.01), and Social activities (p<0.01). In addition area of limitation of activities was not showed greater statistical significance between the pre treatment and the post treatment. (p>0.01). As study, it reported that the TKP has a hypoglycemic effect for short and long term with a glycaemic control and this therapy makes people feels better.

*Key words: Diabetic mellitus, Fasting Blood Sugar, quality of life, Tripala kataka pata decoction*

## ALLOMETRIC SCALING OF MIDAZOLAM FOR INTERPOLATION OF PEDIATRIC DOSES

<sup>1</sup>Nipuni Adhikari, <sup>2</sup>D.M.K.C. Dissanayake, <sup>3</sup>Ganga Senarathna

*Sri Lanka*

<sup>1</sup>nipuni.adhikari@gmail.com, <sup>2</sup>komadhied91@gmail.com, <sup>3</sup>ganga136@yahoo.com

### **ABSTRACT**

Children are not miniature adults. There is a need of separate dosing approach for pediatric patients due to the exceptionality of their pharmacokinetics. Most commonly used linear dosing methods are known to under predict the pediatric doses. Allometric scaling is a method used to predict pharmacokinetic parameters in human from preclinical data. However allometric scaling can use to find safe and efficacious doses for midazolam in children above 2 years. The objectives are, to establish simple allometric relationship for Midazolam, to establish allometric relationships based on correction factors; liver weight and liver blood flow, to predict drug clearances for children based on simple allometry and correction factors and establish predictive successes, to interpolate doses for children using allometric exponent obtained from simple allometry. Allometric scaling was used to predict pharmacokinetic parameter, which was clearance, of midazolam in children from healthy mammalian data. Liver weight and liver blood flow correction factors were used to improve predictive success. Clearance exponent obtained from simple allometry was used to predict maintenance drug dose for children weighing 15 and 25 kg. Simple allometric exponent (b) and coefficient (a) were 0.54, 2.4. after applying liver weight b- 1.39 a- 0.09, liver blood flow b-1.44 a-0.13. Simple allometric predictive success (Observed CL/Predicted CL) was 0.76. Liver weight and liver blood flow correction showed predictive successes as 1.52, 0.88. Doses predicted for midazolam had more than two fold increase compared to the recommended doses for the selected indications.

Key words: Pharmacokinetics, Midazolam, Allometric scaling, Clearance

**A CASE STUDY IN PROGRESS - USE OF CBRT™ - COLOUR BREATHING  
RELAXATION TECHNIQUE® WITH NHS PATIENTS WITHIN AN NHS  
PRIMARY CARE MENTAL HEALTH SETTING**

Alison Bourne, CBRT™, UK

*ab@colourbreathing.com*

***ABSTRACT***

Colours can have a strong emotional or visceral effect and can affect our psychological state. There is also increasing evidence that colour can impact upon health and well-being. The use of light to treat depression and seasonal affective disorder is now quite well established and there is some evidence that light of particular colour can have a particular effect on e.g. the human circadian rhythm -linked to various diseases including some cancer, diabetes, depression. There is currently great interest in whether colour could be used to impart health benefits or to induce wellbeing in Patients. In particular, there is interest in using colour-related methods as way to alleviate problems caused by anxiety, depression and degenerative conditions such as Dementia as a more sustainable treatment path when compared with drug prescription. The Colour Breathing Disks® were invented in 1997 and granted UK Patent in 2000. The CB Book Kit & Affirmation Cards first showcased at the Frankfurt Book Fair in 2000 and published in 2002, initially as a 'selfhelp' range of products & system to promote the use of colour and CB Disks for 'visual awareness and mindfulness' during gradual mind-body relaxation. The first CB study of 1999 – 2000 had 120 volunteers; 84% participants found it easier to relax using CB Disks rather than visualisation. Follow up workshops feedback requested creation of a CB Training Programme, so licensed Practitioners could provide quality relaxation sessions to the public. Once written, CB became an accepted BCMA regulated complementary therapy by BCMA. The intention is to provide NHS Patients (Ps) a new form of evidence based PT and behavioural health experience to support their mental health (MH) recovery process with clinician led CBRT™ Relaxation Support Sessions (CBRT RSS.) NHSUK MH services have to cater for people of all ages, from all walks of life and with very different needs. CBRT will provide NHS Ps with a new easily accessible and evidence based therapy, ideal for prevention & early intervention programmes to encourage reductions in sickness absence. The NHS England IAPT programme has focused on the use of the evidence based CBT (Cognitive Behavioural Technique) however CBT is not always found effective. The Clinical Lead for this CBRT programme has estimated that at least 80% of his known Ps will have already experienced CBT yet despite using these NHS most have only found a 'minimal to moderate' improvement and are still facing 'major mental health issues.' Of the Ps on record it is estimated that only 20% have found any form of 'long term remission' from their difficulties. A waiting list now started for CBRT RSS summer 2016. CBRT as a new PT therapy intervention has ability to deliver Ps measurable outcomes to IAPT dataset standards.



CB Disks are designed to be a focus whilst breathing for mind-body awareness (mindfulness) during gradual body relaxation. The CB Disks are seven circles of pure colour (red, orange, yellow, green, blue, purple and magenta) each with a distinctive varying gradient design. They are each presented in individual settings on a white background in the order of (R, O, Y, G, B, P, M) in an easel card, 'standalone' format, with a wire-o-bind attachment mechanism, which enables each CB Disk to be viewed and changed in the correct sequence during the relaxation session. Each colour relates to a different areas of the body ('Chakra energy centres in ancient Vedic Vibrational Energy Medicine texts, location key endocrinal glands) being base of spine, pelvic area, stomach, heart/lungs, throat, forehead and crown areas. R & D since 2003: three years inclusion in EI (Emotional Intelligence) led "Discovery Programme" (2003–06) in UK Schools; community led MH/wellbeing programmes in Belfast & N.Ireland (2005-16) supported by "Action Mental Health" & "NHS Southern Health Care Foundation Trust." [www.colourbreathing.com](http://www.colourbreathing.com) contains page about UK Doctors & MH Specialists who approve of CBRT including Dr. K.T.Birinder, NHS GP based in Barnsley and CB Practitioner since 2005 uses CBRT in practice. Between 2010 – 16, CB has 100% focused with many preparations for NHS entry, creating new acronym CBRT for NHS use and successfully showcasing at very first NHS/DH Innovation Healthcare Expo. This followed by key meetings – DH, NHS England Directorate, clinicians, NHSNIHR Researchers. CBRT assigned support from DH Innovation Lead, completing NHS NIC (National Innovation Centre) Technology Scorecard due diligence process (92.53%) as medical device, new PT System, Ps Tool Kit, Training Programme. In 2013, 5 months 'NHS South of England' due diligence aligned potential NHS Ps benefits of CBRT with existing 'NICE Quality Standards for Depression.' CBRT also selected 2013 by BMJ/NHS England panel poster presentation at "Future of Health Conference for Long Term Conditions." Feedback from recent work in N. Ireland continues to demonstrate CBRT provides valuable support in recovery & rehabilitation community based programmes, helping people feel more self-empowered for their future and sense of improved wellbeing. CBRT RSS will be delivered & evaluated within community Primary Care GP setting by NHS General MH Practitioner/Nurse Prescriber. The CL has completed a two days CBRT Practitioner Training Programme, 0 question assessment paper, 10 case studies. Anticipated that many trial group Ps will not have experienced CB or mindfulness based practices before. Pswill each receive 4 to 8 individual '1 to 1' sessions as part of treatment, with possibility of future inclusion in small CBRT group sessions (> 5 Ps) for ongoing support. CORE 34 system (routine outcomes to NHS IAPT KPIs data standards requirements) to be used as measure to gauge effectiveness of treatment – i) viewed by Ps and ii) if MH conditions or sense of wellbeing has improved. The premise is that thisinnovation using application of colour in clinical practice will provide a new MH intervention for long term support with evidence base. CBRT now preparing Quality Management Systems ISO: 13485 (Class 1 Medical Device); CE mark, FDA USA, CPD Accreditation with RCN & other bodies. A disruptive innovation – CBRT has potential to transform mainstream MH provision/health prevention programmes to provide effective yet low cost therapy treatments for Ps experiencing anxiety, depression and long term conditions.

Key words: colour, breathing, therapy, relaxation

## FOOD SAFETY IN SCHOOL CANTEENS IN KILINOCCHI DISTRICT

<sup>1</sup>Saseela Subaskaran, <sup>2</sup>H.D.P.Handapangoda, <sup>3</sup>K.V.N.Devapriya

<sup>4</sup>L.G.W.De Silva, <sup>5</sup>J.A.D.L.S.Jayatillaka, <sup>6</sup>V.A.D.Kularatna

<sup>1</sup>*Ministry of Health, <sup>2, 3, 4, 5, 6</sup> National Hospital of Sri Lanka.*

<sup>1</sup>*saseelasubash@yahoo.com*

### **ABSTRACT**

Background: Food safety is an increasingly important public health issue. Because of increasing number of food safety problems and the rising consumer concerns, governments all over the world are intensifying their efforts to improve the food safety. This study was carried out to describe the level of food safety in school canteens in Kilinochchi district. Methods: It was a descriptive cross sectional study. First, an observational check list was developed with literature review and expert opinion. All the schools in the study area were included in the study and 40 canteens were studied using the observational check list, as only 40 schools had canteens. Results: The level of food hygiene was satisfactory in 62.5 % of canteens. The environmental sanitation was satisfactory in 70.0% of canteens and safe water supply was available in all the canteens (100.0%). The practices were poor among 37.5% of food handlers. All the canteens were supervised by the school administration and the Public Health Inspector. All the canteens were recorded with H - 800 checklists. In an interview with the principals about the schools without canteens, it was found that the unsafe canteens were not encouraged in schools to ensure the food safety to the children, in Northern Province. Conclusions: The food safety of available school canteens is satisfactory in Kilinochchi district.

*Key words: school canteens, food safety, food hygiene*

**FACTORS ASSOCIATED WITH COMPLIANCE FOR TREATMENT OF  
DIABETES MELLITUS AMONG PATIENTS ATTENDING DIABETIC CLINIC IN  
NATIONAL HOSPITAL OF SRI LANKA**

<sup>1</sup>Saseela Subaskaran, <sup>2</sup>W. M. L. N. Wijesinghe, <sup>3</sup>C. T. M. Kotthigoda, <sup>4</sup>P. H. I. De Silva, <sup>5</sup>W.

S. P. K. Weerasekara

<sup>1</sup>Ministry of Health, <sup>2,3,4,5</sup> National Hospital of Sri Lanka

<sup>1</sup>saseelasubash@yahoo.com

***ABSTRACT***

Background: On average, half the patients prescribed medications for modifiable risk factors common to people with diabetes discontinue therapy within 12 months of treatment initiation (Yudkin 2010). Objective: To describe the prevalence and associated factors of compliance for diabetes treatment among diabetes mellitus patients attending National Hospital of Sri Lanka Methodology: The study was conducted among patients with Diabetes Mellitus National Hospital of Sri Lanka. The sample was 425 according to a formula for prevalence study by Lwanga and Lameshow (1991). All the diabetic patients were included till the sample size was achieved. The study instrument was an interviewer administered questionnaire developed by the investigator with expert opinion. Results: The mean age of the study population was 52.8 years the sex distribution was almost equal between male and female. Majority of the patients (76.7%) attended the clinic regularly and majority had taken the medicines regularly (71.5%). Regarding the diet, more than half of the patients did not follow the dietary advice of the health staff (63.7%). Approximately one tenth of the patients reduced alcohol consumption and smoking after getting the disease and very low proportion of the patients were doing physical activity (5.6%). Conclusions: The compliance for clinic attendance and the medication intake was good while compliance for the life style modifications is not satisfactory. Health promotion for the lifestyle modifications has to be done more effectively in future.

*Key words: Diabetes mellitus, management for Diabetes mellitus, Compliance for treatment for Diabetes.*

**ASSESSMENT OF BEHAVIOUR CHANGE INTERVENTION TO IMPROVE THE  
NUTRITIONAL STATUS (UNDER WEIGHT) OF PRESCHOOL CHILDREN IN  
MULLAITIVU MOH AREA**

<sup>1</sup>Saseela Subaskaran, <sup>2</sup>Poonkothai Thayalaseelan, <sup>3</sup>Stella Rathini Jude, <sup>4</sup>Arumugam  
Thayalaseelan, <sup>5</sup>Selvarajah Mugunthan, <sup>6</sup>Masilamani Kalaichchelvan

*Sri Lanka*

<sup>1</sup>saseelasubash@yahoo.com

***ABSTRACT***

**Introduction:** Good nutrition is essential for achieving and maintaining good health, improving quality of life, and enhanced socio-economic development of the country. Inappropriate infant and young child feeding practices and inappropriate complementary feeding still persist. Inadequate knowledge and time constraints on the part of caregiver are major contributory factors for poor feeding practices than the economic hardships. The study was carried out to assess the effectiveness of a behavior change intervention to improve the nutritional status (underweight) of preschool children Mullaitivu MOH area. **Methods:** The study population was the mothers of selected underweight children. Twenty six mothers with underweight children in from 2 preschools in one PHM area were given intervention and 26 mothers from another PHM area were kept in the wait list as controls. The education was given using materials on how to improve the nutritional status of the children. The mothers were given education in group and individually as well. After 6 months of intervention the weight of the children were checked and looked for any significant improvement. **Results:** The factors identified as reasons for underweight included poor knowledge about cheap and nutritious foods available locally, not feeding during illness and feeding the child with junk foods. The intervention showed improvements in proportion of underweight children, but it was not statistically significant ( $p < 0.05$ ). **Conclusions:** The intervention by this methodology has to be checked with longer post intervention period and with bigger sample size for statistically significant improvement.

*Key words: child nutrition, malnutrition, complementary feeding*

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