FSK POSTGRADUATE COLLOQIUM 2021

E-ABSTRACT BOOK

SEPTEMBER 30

WEBEX PLATFORM

CONTENT

MESSAGE FROM THE DEAN, FACULTY OF HEALTH SCIENCES UNIVERSITI SULTAN ZAINAL ABIDIN

Assalamualaikum Warahmatullahi Wabarakatuh and a greeting of peace.

First and foremost, I would like to extend my warmest welcome to all lecturers and our beloved postgraduate students of the FSK Postgraduate Colloquium 2021. This colloquium is an annual activity to provide a platform for research progress presentation. I hope this colloquium will stimulate an active performance among FSK postgraduate students and boost the research activities in targeting the timeline for the study program (Master and Doctor of Philosophy). Due to this COVID-19 pandemic situation, the colloquium is conducted virtually which is in line with the new norm as enforced by the Ministry of Malaysia.

It is our hope that the FSK Postgraduate Colloquium 2021 will be a remarkable success. The main purpose of this colloquium is to assist the postgraduate students on their track according to their milestone of the study. In addition, this platform enhances a communication skill on how to deliver research progress verbally as it serves a pre -viva voce in the forthcoming. Last but not least, this platform also garners and boost creative mind with constructive comments from the reviewers that can be gained from this virtual program.

I would like to express my sincere appreciation to Dr Asheila AK Meramat, the Chairman of the program, the committee members and the respective appointed reviewers for their outstanding contributions. My appreciation also goes to all the supervisors and postgraduate students for their inclination to present their research progress. We hope that you will find the colloquium productive, informative and enjoyable. My heartiest congratulations to all involved in making this conference a success.

Thank you and best wishes.

PROFESSOR DR. SAKINAH BINTI HARITH
Dean

ORGANIZING COMMITTEE

Advisor : **Prof. Dr. Sakinah binti Harith**

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iii. **Dr Noor Zarina binti Abd Wahab**

Moderator:

i. **Dr Kan Su-Yin (Group A)**
ii. **Miss Chin Yi Ying (Group B)**

TENTATIVE PROGRAMME

FSK E-COLLOQUIUM DAY 2021

Time	Programme
8:45 - 9:00	**Emcee: Dr Elza Azri bin Othman** **Welcoming speech:** Prof Dr Sakinah Harith **Link:** https://unisza.webex.com/unisza/j.php?MTID=medafb28ce326ec60711536ff8bc52454
9:00 - 13:00	Presentation of FSK E-*COLLOQUIUM DAY* 2021 (Group A dan Group B)
13:00 - 13:30	**Closing Ceremony** **Closing speech:** Dr Kamarul Amin bin Abdullah@ Abu Bakar ***"Outstanding Oral Presenter Award"*** Emcee: Dr Elza Azri bin Othman **Link:** https://unisza.webex.com/unisza/j.php?MTID=medafb28ce326ec60711536ff8bc52454

Group A
Moderator: Dr Kan Su Yin
Link: https://unisza.webex.com/unisza/j.php?MTID=md1e01354bd3070b9b8e16e34de51809e

Time	Programme
9:00 - 9:30	**Presenter:** Belal Bassam Almajali *(Elucidate the theurapeutic impact of thymoquinone on c-Myc oncogene in acute myeloid leukemia)*
9:30 - 10:00	**Presenter:** Hanan Kamel Saad *(Molecular characterization of target genes and gene mutations involved in iron metabolism in Hemoglobin E/beta-thalassemia patients in Kuala Terengganu, Malaysia)*
10:00 - 10:30	**Presenter:** Futoon Abedrabbu Falah Al-Rawashde *(Deciphering the Effect Mechanism of Thymoquinone on JAK/STAT Signaling Negative Regulation in Myeloid Leukemia)*
10:30 - 11:00	**Presenter:** Nesrin Jehad Seder Eddin Seder *(Phytochemical analysis of Trigona honey and putative antibiofilm activity against Pseudomonas aeruginosa and streptococcus pyogenes via microarray)*
11:00 - 11:30	**Presenter:** Sholehah binti Ab Rahman *(Unraveling The Mechanism of Targeted Ethno-Medicinal Compound in MCF7 Cell Line)*
11:30 - 12:00	**Presenter:** Hudaa Zulfaa binti Mohd Zainuddin *(Anticancer effect of Chrysanthemum sp. against human leukaemic cell lines HL60 and K562)*
12:00 - 12:30	**Presenter:** Haswati @ Nurhayati binti Abdullah *(The Influence of Quorum Sensing Activity on Antibiofilm Effects of Probiotic Lactobacillus Against Pseudomonas Species)*
12:30 - 13:00	**Break**
13:00	**Closing ceremony**

GROUP B Moderator: Ms Chin Yi Ying Link: https://unisza.webex.com/unisza/j.php?MTID=ma501950fbfd3c22ef0873a04899759c9	
Masa	**Aturcara**
9:00 - 9:30	**Presenter:** Nurul Fatihah Binti Mohd Fauzi *(Randomized Controlled Trial of A Digital Therapy for Diabetes Prevention Among High Risk Individual)*
9:30 - 10:00	**Presenter:** Ahmad Faezi Bin Ab.Rashid *(Interactive Malaysian Childhood Healthy Lifestyle Program (i-MaCHeL) intervention for preschool's child-parent dyads to prevent childhood obesity: A cluster-randomized controlled trial)*
10:00 - 10:30	**Presenter:** Laila Ruwaida binti Mohd Zainuddin *(Development of web-based food frequency questionnaire for adults in Malaysia)*
10:30 - 11:00	**Presenter:** Yusrizarni *(Pengaruh Aktiviti Fizikal dan Tingkah Laku Sedentari Terhadap Status Kesihatan Dalam Kalangan Dewasa Di Nagan Raya Aceh)*
11:00 - 11:30	**Presenter:** Irwan Iskandar Jusoh *(Establishing of Diagnostic Reference level for brain,thorax and abdomen in Terengganu)*
11:30 - 12:00	**Presenter:** Adila Hanim binti Aminordin Sabri *(Brachytherapy Room Shielding Design of High Dose Rate (HDR) Gamma Source by Using Monte Carlo Simulation Code(s))*
12:00 - 12:30	**Presenter:** Naseem Mohammad Hussein Alshwaiyat *(Effect of Weight Loss on Iron Status Among Overweight and Obese Young Jordanian Women With Iron Deficiency Anemia)*
12:30 - 13:00	**Presenter:** AL-Shameri Emad Ali Hasan *(Predictors of the Risk of Malnutrition among Children under five Years Old in Sana'a City, Yemen: A Case-control study)*
13:00 -13:30	**Closing Ceremony**

LIST OF PRESENTERS

No	Participant Name	Student Number	PhD/MSc	Research Title	Supervisor
1.	Belal Bassam Almajali	SI2943	PHD	Elucidate the theurapeutic impact of thymoquinone on c-Myc oncogene in acute myeloid leukemia	Dr. Hamid Al-Jamal
2.	Hanan Kamel Saad	SI2751	PHD	Molecular characterization of target genes and gene mutations involved in iron metabolism in Hemoglobin E/beta-thalassemia patients in Kuala Terengganu, Malaysia	Dr Hamid Al-Jamal
3.	Futoon Abedrabbu Falah Al-Rawashde	SI3474	PHD	Deciphering the Effect Mechanism of Thymoquinone on JAK/STAT Signaling Negative Regulation in Myeloid Leukemia	Dr Hamid Al-Jamal
4.	Nesrin Jehad Seder Eddin Seder	SI2735	PHD	Phytochemical analysis of Trigona honey and putative antibiofilm activity against Pseudomonas aeruginosa and streptococcus pyogenes via microarray	Dr.Mohd Hilmi Bin Abu Bakar
5.	Sholehah binti Ab Rahman	SL2239	PHD	Unraveling The Mechanism of Targeted Ethno-Medicinal Compound in MCF7 Cell Line	Dr. Wan Rohani Wan Taib
6.	Hudaa Zulfaa binti Mohd Zainuddin	SL3363	PHD	Anticancer effect of Chrysanthemum sp. against human leukaemic cell lines HL60 and K562	Dr. Wan Nurfarahin binti Wan Osman
7.	Haswati @ Nurhayati binti Abdullah	SL2814	MSC	Antibiofilm effects of probiotic lactobacillus against Pseudomonas species	Dr. Norzawani Jaffar
8.	Nurul Fatihah Binti Mohd Fauzi	SL2336	PHD	Randomized Controlled Trial of A Digital Therapy for Diabetes Prevention Among High Risk Individual	Prof. Madya Dr. Sharifah Wajihah Wafa
9.	Ahmad Faezi Bin Ab.Rashid	SL3322	PHD	Interactive Malaysian Childhood Healthy Lifestyle Program (i-MaCHeL)	Prof. Madya Dr. Sharifah Wajihah Wafa

				intervention for preschool's child-parent dyads to prevent childhood obesity: A cluster-randomized controlled trial	
10.	Laila Ruwaida binti Mohd Zainuddin	SL 2870	PHD	Development of web-based food frequency questionnaire for adults in Malaysia	Dr Che Suhaili Che Taha
11.	Yusrizarni	SI2705	MSC	Pengaruh Aktiviti Fizikal dan Tingkah Laku Sedentari Terhadap Status Kesihatan Dalam Kalangan Dewasa Di Nagan Raya Aceh	Dr Wee Bee Suan
12.	Naseem Mohammad Hussein Alshwaiyat	SI 3346	PHD	Effect of Weight Loss on Iron Status Among Overweight and Obese Young Jordanian Women With Iron Deficiency Anemia	Dr. Aryati Ahmad
13.	Irwan Iskandar Yusof	SL3149	MSc	Establishing of Diagnostic Reference level for brain,thorax and abdomen in terengganu	Dr.Kamarul Amin Bin Abdullah
14.	Adila Hanim binti Aminordin Sabri	SL1433	PHD	Brachytherapy Room Shielding Design of High Dose Rate (HDR) Gamma Source by Using Monte Carlo Simulation Code(s)	Dr. Suffian Mohamad Tajudin
15.	Al-Shameri Emad Ali Hasan	SI 2695	PHD	Predictors of the Risk of Malnutrition among Children under five Years Old in Sana'a City, Yemen: A Case-control study	Prof. Madya Dr. Sharifah Wajihah Wafa

LIST OF ABSTRACTS

GROUP A: LAB-BASED

GENE EXPRESSION PROFILING AND PROTEIN ANALYSIS REVEAL SUPPRESSION OF C-MYC ONCOGENE BY THYMOQUINONE THROUGH SIGNALING PATHWAYS INHIBITION IN AML CELLS

Belal Almajali [1], Hamid Ali Nagi Al-Jamal [1,*], Wan Rohani Wan Taib [1], Imilia Ismail [1], Muhammad Farid Johan [2], Abdalmonem Doolaanea [3], Wisam Ibrahim [4]

1 Faculty of Health Sciences, Universiti Sultan Zainal Abidin (UniSZA), 21300 Terengganu, Malaysia; bel_basss@yahoo.com (B.A); wanrohani@unisza.edu.my (W.R.W.T); imilia@unisza.edu.my (I.I)
2 Department of Haematology, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, 16150, Kelantan, Malaysia; faridjohan@usm.my
3 Faculty of pharmacy, International Islamic University Malaysia, 25594 Kuantan, Malaysia; monem@iium.edu.my
4 Department of Biomedical sciences, Collage of Health sciences, QU Health, Qatar University, 00000 Doha, Qatar; w.ibrahim@qu.edu.qa

** Correspondence: aljamalhamid@unisza.edu.my ; Tel.: +60174729012*

Abstract

Objectives: overexpression of c-Myc plays an essential role in leukemogenesis and drug resistance, making c-Myc an attractive target for cancers therapy. However, it's impossible to target c-Myc directly. Therefore, the effect of Thymoquinone (TQ), a bioactive component in *Nigella sativa* on c-Myc-regulatory signaling pathways such as JAK/STAT and PI3K/AKT/mTOR pathways, and their consequences on cell proliferation and apoptosis, was investigated in HL60 leukemia cells. **Methods**: MTT and trypan blue exclusion tests were performed to determine the 50% inhibitory concentration (IC_{50}). FITC Annexin and Guava® reagent were used to study the cell apoptosis and examine cell cycle phases, respectively. Gene expression profiling was examined by Next-generation sequencing. Followed by validation of gene expression for c-Myc and genes involved in JAK/STAT and PI3K/AKT/mTOR by RT-qPCR. In addition, Jess assay analysis was performed to determine the TQ effects on protein expression and phosphorylation. **Results**: TQ potentially inhibited proliferation of HL60 cells, induced apoptosis with cell cycle arrest at G1 and S phases. More than 100 genes were significantly down or up-regulated after TQ-treatment *(P<0.002)*. Most of these genes are related to apoptosis and proliferation. Protein analysis results show that TQ also inhibited protein expression and phosphorylation in JAK/STAT and PI3K/AKT pathways, leading to inhibition of c-Myc protein. **In conclusion**, these findings suggested that TQ inhibits proliferation and induces apoptosis in leukemia cells by downregulation of c-Myc expression through inhibition of JAK/STAT and PI3K/AKT signaling pathways.

Keywords: HL60, Thymoquinone, Proliferation, Apoptosis, Flow-Cytometry, RT-qPCR, NGS, Jess assay

REDUCED HEPCIDIN EXPRESSION ENHANCES IRON OVERLOAD IN PATIENTS WITH HBE/B-THALASSEMIA: A COMPARATIVE CROSS-SECTIONAL STUDY

HANAN KAMEL M. SAAD[1], HAMID ALI NAGI AL-JAMAL[2], WAN ROHANI WAN TAIB[3], IMILIA ISMAIL[3], MUHAMMAD FARID JOHAN[3] and ABDULLAH SALEH AL-WAJEEH[4],

[1]*School of Biomedicine, Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300 Kuala Nerus, Terengganu*
[2]*Department of Haematology, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, 16150, Kelantan, Malaysia;*
[3]*Anti-Doping Lab Qatar, Doha, Qatar*

Correspondence to: Hanan Kamel Saad of Biomedicine, Faculty of Health Sciences, Sultan Zainal Abidin Universiti, Gong Badak Campus, 21300 Kuala Nerus, Terengganu, Malaysia
E-mail : hanansaad595@gmail.com

Abstract

Iron homeostasis is regulated by hepcidin (HEPC) that controls the dietary iron absorption and recycling. HEPC deficiency contributes to iron overload in β-thalassemia patients. The present study aimed to investigate the correlation between HEPC concentration and serum iron status among hemoglobin E/β-thalassemia patients and their parents (HbE trait and β-thalassemia trait) compared with healthy controls. Therefore, iron profile and HEPC level were examined in 65 HbE/β-thalassemia patients and 65 parents at HSNZ Hospital and in 130 students as healthy controls from UniSZA, Terengganu, Malaysia. Furthermore, six samples from each group were randomly selected for gene expression analysis of *HEPC* and *ferroportin1 (FPN1)* using reverse transcription quantitative PCR. The results demonstrated that serum HEPC level was significantly decreased in HbE/β-thalassemia patients and parents ($P<0.001$) compared to healthy controls. Additionally, the gene expression analysis showed a dramatically downregulated *HEPC* in HbE/β-thalassemia patients and parents ($P=0.001$) compared to healthy controls. However, there was a marked upregulation of *FPN1* in HbE/β-thalassemia patients and parents ***(P=0.001)*** compared to healthy controls. Iron profiling results revealed a significantly increased serum ferritin in HbE/β-thalassemia patients and parents compared to healthy controls ***(P<0.001)***. These findings supported the hypothesis that downregulated *HEPC* could lose its function as a negative regulator of *FPN1*, resulting in iron overload in HbE/β-thalassemia patients. Subsequently, assessing *HEPC* and *FPN1* gene expression may be a useful tool to determine the risk of iron toxicity in patients with HbE/β-thalassemia and their parents, and could therefore be considered as a therapeutic target in the management of iron burden in these patients.

Key words: hepcidin, ferroportin1, iron-homeostasis, ferritin, hemoglobin E trait, β-thalassemia trait, hemoglobin E/β-thalassemia

DECIPHERING THE EFFECT MECHANISM OF THYMOQUINONE ON JAK/STAT SIGNALING NEGATIVE REGULATION IN MYELOID LEUKEMIA

Futoon Abedrabbu Al-Rawashde [1], Muhammad Farid Johan [2] , Wan Rohani Wan Taib[1], Imilia Ismail [1], Hamid Ali Nagi Al-Jamal [1,*]

[1] *School of Biomedicine, Faculty of Health Sciences, Universiti Sultan Zainal Abidin (UniSZA), Terengganu 21300, Malaysia.*

[2] *Department of Haematology, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan 16150, Malaysia.*

***** Correspondence: aljamalhamid@unisza.edu.my; Tel.: +60-174729012

Abstract

Background: Epigenetic silencing of TSGs by DNA hypermethylation plays an essential role in the pathogenesis of leukemia. *SHP-1, SOCS-1* and *SOCS-3* are TSGs that negatively regulate JAK/STAT signaling. Re-expression *SHP-1, SOCS-1* and *SOCS-3* through de-methylation represents therapeutic targets in several cancers. Thymoquinone (TQ) is the major component of *Nigella sativa* that has shown anticancer activities. The aim of this study is to evaluate the potential of TQ to re-express *SHP-1, SOCS-1* and *SOCS-3* through altering DNA methylation as a molecular rule mediating the anti-leukemia activities of TQ. **Methods**: K562 cells and MV4-11 cells were treated with TQ. Cytotoxicity, apoptosis and cell cycle assays were investigated using cell counting WSTs-8 kit, Annexin V-FITC/PI apoptosis detection kit and Fluorometric-Red Cell Cycle Assay Kit, respectively. Methylation profiling of *SHP-1*, *SOCS-1* and *SOCS-3* was determined by pyrosequencing analysis, expression of target genes was determined using RT-qPCR. **Results:** TQ significantly decreased the expression of *DNMT1*, *DNMT3A*, *DNMT3B* and increased the expression of *TET2* and *WT1* in K562 and MV4-11 cells. This led to a decrease in promotor methylation of *SHP-1* and *SOCS-3* genes, re-expression of *SHP-1* and *SOCS-1*and a significant growth inhibition and apoptosis induction with cell cycle arrest. The promotor of *SOCS-1* gene was completely not methylated in both K562 cells and MV4-11 cells and *SOCS-1* mRNA levels was increased in TQ-treated K562 cells and MV4-11 cells. **CONCLUSION:** We conclude that TQ inhibit growth of myeloid leukemia cells by decreasing promotor methylation of *SHP-1* and *SOCS-3*.

Keywords: Thymoquinone**,** hypomethylation**,** *SHP-1*, *SOCS-3*, CML, AML.

PHYTOCHEMICAL INVESTIGATION, COMPARISON AND CHARACTERIZATION STUDY OF MALAYSIAN STINGLESS BEE HONEY VERSUS JORDANIAN HONEY BY LC-MS/MS

Nesrin Seder[1], Walid Abu Rayyan[2*], Mohammad A. Al-Natour[3], Wael Abu Dayyih[3], Abu Bakar Mohd Hilmi[1*]

[1]*School of Biomedical Science, Faculty of Health Sciences, University Sultan Zainal Abidin, 21300 Kuala Nerus, Terengganu, Malaysia*

[2]*Department of Medical Laboratory Analysis, Faculty of Science, Al-Balqa Applied University, Al-salt, Jordan.*

[3]*Pharmaceutical Medicinal Chemistry and Pharmacognosy Department, Faculty of Pharmacy and Medical Sciences, University of Petra, Amman, Jordan.*

Corresponding Author*: mhilmiab@unisza.edu.my , walid.aburayyan@uop.edu.jo

Phone: +962790272152

Abstract

Honey has been used as a folk remedy since the ancient times, Malaysian stingless bee honey was known for its effective therapeutic properties. However, dearth of information about the phytochemical properties of stingless bee honey is reported by many scientists. Thus, phytochemical and chromatographic analysis of Malaysian stingless bee honey (*Trigona* species) was conducted in comparison with two Jordanian honeys; *Centaurea hyalolepis* and Citrus honeys (*Apis* species) as reference honeys. Total phenolic content of the three honey types were determined according to Folin-Ciocalteu method. The antioxidant activity was evaluated using DPPH method. Phenolic compounds were identified using liquid chromatography tandem mass spectrometry (LC-MS/MS). The total phenolic content ranged between 288.09 and 663.19 mg.GAE/kg of honey in the three honey types. *Trigona* honey comprises the highest phenolic content (663.19 mg.GAE/kg) followed by *C. hyalolepis* honey (471.87 mg GAE/kg), then Citrus honey (288.09 mg.GAE/kg). *Trigona* honey showed an IC_{50} of 61.042 ± 0.45 $mg.mL^{-1}$, whereas, *C. hyalolepis* honey and Citrus honey showed IC_{50} of only 120.29 ± 1.64 $mg.mL^{-1}$ and 129.51 ± 4.3 $mg.mL^{-1}$, respectively. Statistical analysis revealed a significant negative correlation between the IC_{50} value for the three honey samples and the proportional concentration of polyphenols ($p \leq 0.001$). Chromatographic analysis showed a 28 and 42-fold difference in the polyphenolic content in *Trigona* over *C. hyalolepis* and Citrus honey, respectively. In conclusion, the diversity in the polyphenols contents and the high amounts of phytochemical compounds found in *Trigona* honey endows the antioxidant activity in a synergistic effect.

Keywords: *Trigona* honey, LC-MS/MS, DPPH, Malaysia, Jordan.

IN-VITRO CYTOTOXICITY EFFECT OF *PRISMATOMERIS* GLA*BRA*'S CRUDE EXTRACT ON MCF-7 BREAST CANCER CELL LINE

Sholehah Ab Rahman[1*], Wan Rohani Wan Taib[1], Razifah Mohd Razali[2], Illyana Ismail[1], Nurhaslinda Ridzwan[1]

[1]Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Kuala Terengganu.
[2]School of Fundamental Science, Universiti Malaysia Terengganu, 21300 Kuala Nerus, Terengganu, Malaysia.

*Corresponding author (email): sholehah.ab.rahman@gmail.com

Abstract

Side effect from current invasive breast cancer treatment is not negligible, therefore researchers seek alternative in natural product such as herbs to minimise the side effect and progression of disease. The aim of the study was to investigate the cytotoxic effect of ethanol (LE), methanol (LM), and aqueous (LW) crude extract of *Prismatomeris glabra* leaves on MCF-7 breast cancer cell line for 24, 48 and 72 hours. The method employed was MTT assay to determine the half maximal inhibitory concentration (IC_{50}) of the extracts at different concentrations. The IC_{50} was obtained by plotting the concentration (µg/mL) versus the percentage of inhibition of each extract. Liquid chromatography-mass spectrometry, quadrupole-time-of-flight mass spectrometry (LCMS/MS QTOF) was used to screen compounds from the leaves' crude extracts. Result from MTT assay showed that aqueous (LW) extract had demonstrated the lowest IC_{50} values ($p<0.05$) compared to ethanol and methanol extract. The IC_{50} values obtained after 24, 48 and 72 hours of treatment were 63.00 ± 5.00 µg/mL, 19.50 ± 4.50 µg/mL and 51.33 ± 5.21 µg/mL, respectively. The morphology analysis revealed the occurrence of apoptosis in LE, LM and LW treated cell line. The screened compound showed the presence of anthraquinones, phenolic acid and flavonoids. The compounds may induce intrinsic and extrinsic pathway of cell deaths. This study suggests that *P.glabra* leaves extract has potential to inhibit the MCF-7 cell growth through induction of apoptosis.

Keywords: *Prismatomeris glabra,* cytotoxicity, MCF-7 cell line, MTT, morphology

ANTI-PROLIFERATIVE EFFECT OF AQUEOUS *CHRYSANTHEMUM MORIFOLIUM* FLOWER EXTRACT AGAINST HUMAN CHRONIC MYELOID LEUKAEMIA (K562) CELL LINES

Hudaa Zulfaa Mohd Zainuddin[1*], Wan Nurfarahin Wan Osman[1], Imilia Ismail[1]

[1]*School of Biomedicine, Faculty of Health Science, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300, Kuala Nerus, Terengganu, Malaysia*

**Corresponding author (email): hudaazulfaa@unisza.edu.my*

Abstract

Chrysanthemum morifolium (Ju Hua) flower, a traditional Chinese herb is discovered to be an invaluable source for cancer remedy. Chemotherapy is beneficial for chronic myeloid leukemia (CML) treatment, but issues of multi-drug resistance (MDR) can make chemotherapy ineffective, thus there is a constant need for alternative cure. The present study investigates the anti-proliferative activities of *Chrysanthemum morifolium* flower aqueous extract on human chronic myeloid leukaemia (K562) cell lines. The flower powder was macerated in distilled water for 24 hours. The extract was concentrated under reduced pressure using rotary evaporator and lyophilised until the crude was obtained. K562 cells were treated at concentrations of 12.5 µg/ml, 25 µg/ml, 50 µg/ml, 100 µg/ml, 200 µg/ml and 400 µg/ml and incubated for 24, 48 and 72 hours. The anti-proliferative activity was determined using MTT assay and the cell morphological changes was observed using phase contrast microscopy. The IC_{50} value was obtained by plotting the percentage of viability of K562 cells versus the extract concentration (µg/ml). The extract showed significant anti-proliferative effects against K562 cells ($p < 0.05$) with IC_{50} values of 226 µg/ml at 24 hours, 205 µg/ml at 48 hours and 185 µg/ml at 72 hours. Significant morphological changes were also observed in the cells after treatment with extract in all incubation periods with presence of apoptotic cell signatures. These results suggest that the extract inhibits the proliferation of K562 cells and induced apoptosis of K562 cells in a time- and dose-dependent manner. The study outcomes show promising anti-cancer ability for *Chrysanthemum morifolium*.

***Keywords*:** Anti-proliferative; *Chrysanthemum morifolium*; flower; aqueous; K562 cells

THE INFLUENCE OF QUORUM SENSING ACTIVITY ON ANTIBIOFILM EFFECTS OF PROBIOTIC LACTOBACILLUS AGAINST PSEUDOMONAS SPECIES

Haswati @ Nurhayati Abdullah[1,2*], Suharni Mohamad[2], Wan Rohani Wan Taib[1], Norzawani Jaffar[1]

[1]*Faculty of Health Sciences, Universiti Sultan Zainal Abidin (UniSZA), Gong Badak Campus, 21300 Kuala Terengganu, Terengganu.*
[2]*School of Dental Sciences, Universiti Sains Malaysia, Health Campus, 16150 Kubang Kerian, Kelantan*.

* *Corresponding author (email):* haswati@usm.my

Abstract

Pseudomonas species known to cause disease in humans are associated with opportunistic infections. Opportunistic infection triggered by pathogens that take advantage of an opportunity not ordinarily accessible. Antibiotics are used to treat these infections. However, established biofilms can be resistant due to their limited penetration of the biofilm's extracellular polymeric substance. Furthermore, antibiotic accumulations damage the environment through the excretion of leftovers after use or the dumping of unneeded drugs. This study highlights the biofilm degradation ability of probiotics lactobacillus against Pseudomonas species and correlates the influence of the quorum sensing activity towards biofilm degradation activity. Five probiotics lactobacillus and two Pseudomonas strains were used. The effects of probiotics lactobacillus towards Pseudomonas's biofilm were determined by using a microtiter plate assay. Acyl-homoserine lactone (AHL) and D-Galactose were used to investigate the influence of the quorum sensing activity, while broth serial dilution assay was carried out to get the lowest concentration of inhibitor that prevents visible growth of the pseudomonas. Data of three replicates were presented as mean ± SD (standard deviation). The comparison was performed using a Student t-test with P-value < 0.05 was considered significant. The result shows a significant difference in biofilm formation in both Pseudomonas strains alone as compared to those co-cultures with the probiotics lactobacillus. AHL and D-Galactose also show a significant difference in influencing the biofilm degradation activity. This upshot implicates an effective outcome of the probiotic Lactobacillus. against Pseudomonas, which can be cutting-edge as a choice of treatment for the infection by this pathogen.

Keywords: antibiofilm, biofilm degradation, quorum sensing, probiotics lactobacillus, pseudomonas species

GROUP B: NON-LAB BASED

RANDOMISED CONTROLLED TRIAL OF A DIGITAL THERAPY FOR DIABETES PREVENTION: OUTCOMES FOR THE FIRST 6-MONTH

Nurul Fatihah Mohd Fauzi[1], Sharifah Wajihah Wafa Syed Saadun Tarek Wafa[1], Mohd Ibrahim Abdullah[1], Naresh Bhaskar Raj[2], Nurulhuda Mat Hassan[3]

[1]School of Biomedicine, Faculty of Health Science, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300, Kuala Nerus, Terengganu, Malaysia
[2]School of Rehabilitation Science, Faculty of Health Sciences, Universiti Sultan Zainal Abdidin, Gong Badak Campus, 21300 Kuala Nerus, Terengganu, Malaysia
[3]Faculty of Medicine, Universiti Sultan Zainal Abidin, Medical Campus, Jalan Sultan Mahmud, 20400 Kuala Terengganu, Terengganu, Malaysia

Corresponding author (email): nurul.fauzi147@yahoo.com

Abstract

Weight-loss interventions delivered via mobile phone technology may help prevent or delay the onset of type 2 diabetes. The purpose of this study is to evaluate the effectiveness of diabetes prevention intervention delivered via a mobile app among adults at high-risk of developing diabetes in Kuala Terengganu. A total of 112 high-risk adults aged 18-65 years old were randomised to either the MyDiPP group (n = 56) or the usual care control group (n =56). Participants in the MyDiPP group received mobile app-based lifestyle intervention and participants in the usual care group received standard health education from primary health providers in the clinic. Primary outcomes were changes in body weight and HbA1c level. Secondary outcomes include changes in the physical activity level, dietary intake and health-related quality of life (HRQoL). The outcomes were measured at 6- and 12-months follow-up. In intention-to-treat analysis at 6-months' post-baseline, the change in weight in both groups over time shows that there was no significant difference between the groups, with a mean weight loss of 0.56kg in the intervention group and weight gain of 1.11kg in the control. Despite lack of treatment effect, the MyDiPP group reported lower HbA1c level compared to the usual care group at 6-month (5.26% Vs 5.34%: p-value = 0.150). Furthermore, MyDipp group demonstrated more positive changes compared to the usual care group in terms of physical activity level, dietary fiber intake, percentage protein and fat intake as well as physical functioning, role physical, vitality and role emotion of HRQoL. The study provides evidence that mobile app-based lifestyle intervention can reduce several diabetes risk factors and improve several HRQoL components among adults at risk of developing diabetes.

Keywords: randomised controlled trial, prediabetes, overweight, obese, T2DM, prevention of diabetes, lifestyle intervention.

A WEB-BASED HEALTHY LIFESTYLE INTERVENTION PROGRAMME FOR PRESCHOOL CHILD-PARENT DYADS: A CLUSTER RANDOMISED CONTROLLED TRIAL

Ab. Rashid Ahmad Faezi[1,*], Wafa Sharifah Wajihah[1], Abd. Talib Ruzita[2], Abu Bakar Nor Mazlina[3]

[1] *Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia*
[2] *Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia*
[3] *Faculty of Business and Management, Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia*

**Corresponding author (email):* faezi.ar@umk.edu.my

Abstract

The aim of this study is to examine the effect of a web-based healthy lifestyle intervention programme for preschool child-parent dyads. The participating preschools (n=12) will be randomised to either an intervention (treatment) or control group in a 1:1 ratio, which will involve 460 child-parent dyads of preschool children aged 5 and 6 years old in Terengganu, Malaysia. The pre-schoolers in the treatment group will receive the i-MaCHeL module delivered through classroom instruction, and their parents will access the i-MaCHeL content via the website. For the control group, the pre-schoolers will receive a standard health education curriculum, and their parents will access the general health newsletters via the WhatsApp group. The i-MaCHeL programme consists of 13 modules that are based on behavioural change techniques, covering topics on nutrition, physical activity, and sedentary as well as parenting skills. The intervention will be delivered over a three-month period and six months' follow-up. Between-group differences over the 3- and 9-month period will be examined at this time point. Outcomes of the study consisting of BMI z-score, dietary intake, physical activity, and health-related quality of life in children; and parental role modelling, parental policies, and parental self-efficacy using previously validated questionnaires will be recorded at baseline, 3-month, and 9-month. The i-MaCHeL intervention is unique, given its Web-based approach to enhance the tool's adoption with hard-to-reach populations, contributing to the long-term goal for childhood obesity prevention.

Keywords: Preschool children, web-based program, BMI z-score, dietary intake, physical activity

DEVELOPMENT OF FOOD LIST FOR FOOD FREQUENCY QUESTIONNAIRE FOR ADULTS IN MALAYSIA

Laila Ruwaida Mohd Zainuddin[1], Che Suhaili Che Taha[1] and Mohd Razif Shahril[2]

[1]School of Nutrition and Dietetics, Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300, Kuala Nerus, Terengganu, Malaysia.
[2]Centre for Healthy Ageing and Wellness (HCARE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia.

**Corresponding author (email):* lailaruwaida@gmail.com (lailaruwaida@unisza.edu.my)

Abstract

Assessing dietary intake is challenging in multi ethnicity populations. Food frequency questionnaire (FFQ) is the most widely used as dietary tools in epidemiological studies because it is more feasible to administer in large population and able to capture habitual dietary intake. This study aimed to develop a food list for semi-quantitative FFQ in a multi-ethnic population in Malaysia. Using data from one day 24-hour dietary recall from a sample of 1175 adults aged 18-65 years old was developed. Percentage contribution analysis and stepwise regression analysis were used to identify foods contributing cumulatively more than more than 90% to intakes and individually more than 1% to intake variance of key nutrients for the study populations. A FFQ covered more than 95% of total population intake for all key nutrients were developed. The next step will involve development of food photograph and related nutrient composition database for Malaysian adults.

THE INFLUENCE OF PHYSICAL ACTIVITY AND SITTING TIME ON HEALTH STATUS AND QUALITY OF LIFE AMONG ADULTS IN ACEH INDONESIA

Yusrizarni,[1*]Wee Bee Suan,[1]Mohd Razif Shahril[2]

[1]*School of Nutrition and Dietetics , Faculty of Health Science, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300, Kuala Nerus, Terengganu, Malaysia*

[2] *Nutrition Program, Center for Healthy Ageing and Wellness (H-CARE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia*

**Corresponding author: yusrizarni0@gmail.com*

Abstract

Physical activity has many beneficial physical, mental and health outcome. Regular physical activity may impove the health status and quality of life (Qol). Meanwhile, sedentary behavior and physical inactivity had deleterious effect on health outcome. Physical inactivity is one of the risk factors for global mortality, accounting for 5% of deaths globally. This cross-sectional study aimed to assess the physical activity and sedentary behavior among the adults; and to determine the relationship of physical activity and sedentary behaviour with the health status and quality of life. A total of 500 respondents aged 18 to 60 years (416 female and 84 male) were recruited from health screening program of five locations in Nagan Raya from March to September 2019. Anthropometric comprised height, weight and waist circumference. Body fat percentage was measured by Innerscan body composition monitor BC-578and blood pressure was taken. Structured questionnaires consist of socio-demographic characteristics, International Physical Activity Questionnaire (IPAQ-long form) and QoL Questionnaire (WHOQOL-BREEF). The result of this study showed that majority of the respondents (71%) earned a monthly income level under the Aheh minimun rate income, and mostly worked as farmer (36.6%). The mean physical activity, sitting time, and quality of life were 3225.1++3202.2 MET-Min/week, 169.51±80.63 h/week and 53.2±6.1, respectively. Multiple linear regression analysis revealed that physical activity and sitting time was associated with health status (BMI, body fat%, waist circumrefence, systolic and diastolic BP, p=0.02). Besides, physical activity was also associated with quality of life (phychological domain,p=0.006 and environmental domain,p=0.020). The findings of the study indicated that physical activity level and increased time spent sitting was associated with health status and QoL. Future intervention program are recommended to include sitting time and physical activity to improve QoL and health status of individual who needed.

Keywords: *Physical activity, sitting time, pedometer, health outcome, quality of life*

ESTABLISHING DIAGNOSTIC REFERENCE LEVELS FOR COMPUTED TOMOGRAPHY EXAMINATIONS OF HEAD, THORAX AND ABDOMEN

Irwan iskandar jusoh[1]; Kamarul Amin Abdullah[2]; Mohd Hanafi Ali[3]

[1,2]Faculty of Health Science, Universiti Sultan Zainal Abidin, MALAYSIA
[3]Discipline of Medical Imaging Science, Sydney School of Health Sciences, University of Sydney, AUSTRALIA

**Corresponding author (email): wanwaqiuddin@gmail.com*

Abstract

Computed Tomography (CT) is commonly used for various diagnostic examinations. Despite constant improvements to imaging technologies, the radiation dose to patients remains a concern. Diagnostic reference levels (DRLs) are used to identify any facility when using high radiation dose during CT. This study aims to assess current patient dose and establish new local diagnostic levels (LDRLs) for Computed Tomography (CT) examinations of brain, thorax, and abdomen at multiple sites in Terengganu state. A comprehensive booklet survey was designed to record patient data and scanning protocols for three CT examinations. Data were collected retrospectively from the participating centers. LDRLs were defined as the values within 75th and 50th of volumetric CT dose index (CTDIvol) and dose length product (DLP). Data sets collected were related to 82 of CT brain, 128 of CT thorax, and 121 of CT abdomen. Results: LDRLs for CTDIvol and DLP for CT brain, thorax, and abdomen were 57.7 ±7.62mGy / 924.0 ± 756.67mGy.cm, 15.54 ± 7.49mGy / 533.1 ± 312.30mGy.cm and 12.29 ± 11.35mGy / 595.1 ± 541.59mGy.cm, respectively. Compared to National DRLs, the LDRLs are comparable and within the range of acceptable percentiles, except for DLP values for thorax and abdomen are slightly exceeded. Major variations in patient dose during CT examination occur due to differences in CT scanners, scanning protocols, and modes.

Keywords: Diagnostic Reference Level, Computed Tomography Dose Volume (CTDIvol), Dose length Product (DLP), Computed Tomography (CT)

CALCULATION OF ATTENUATION PARAMETER FOR IR-192 GAMMA SOURCE IN SHIELDING MATERIALS

Adila Hanim Aminordin Sabri[1], Mohd Zahri Abdul Aziz[2], Stephen Friday Olukotun[3], Suffian Mohamad Tajudin[1]

[1] *Faculty of Health Sciences, Universiti Sultan Zainal Abidin (UniSZA), Terengganu, Malaysia.*
[2]*Oncological and Radiological Science Cluster, Advance Medical and Dental Institute, Universiti Sains Malaysia, Penang, Malaysia.*
[3]*Department of Physics and Engineering Physics, Obafemi Awolowo University, Ile-Ife, Nigeria.*

**Corresponding author (email):* adilahanim@unisza.edu.my

Abstract

Calculation of photon attenuation is necessary for the selection of shielding materials for an irradiation facility. In this work, a Monte Carlo simulation was utilized to assess the effectiveness of clay-polyethylene mixture and clay as the radiation shielding materials for high energy gamma sources (Ir-192). Ordinary concrete was also studied as the benchmark. The calculated linear attenuation values for ordinary concrete are within 0.44% of the standard XCOM value for 380 keV photon. In the case of a multi-energy Ir-192 gamma source, the calculated linear attenuation coefficient (μ) for ordinary concrete is 15.5% and 7.25% higher than clay and fabricated clay-polyethylene, respectively. Meanwhile, μ value for fabricated clay-polyethylene is 8.3% higher than that of clay. In conclusion, a 10 cm thickness of clay and clay-polyethylene mixture is sufficient to attenuate 87% and 89% of photons from Ir-192 source. The calculated linear attenuation coefficients for the three shielding materials are also consistently higher, about 7.5%, than that of the XCOM value for 380 keV photon.

Keywords: Monte Carlo, fabricated clay-polyethylene, clay, ordinary concrete, Ir-192, linear attenuation coefficient.

EFFECT OF WEIGHT LOSS ON IRON STATUS AMONG YOUNG JORDANIAN WOMEN WITH OVERWEIGHT AND OBESITY AND IRON DEFICIENCY ANEMIA

Naseem Mohammad Alshwaiyat[1]*, Hamid Ali Nagi Al-Jamal[2], Wan Mohd Razin Wan Hassan[3], Aryati Ahmad[1]

[1]*School of Nutrition and Dietetics, Faculty of Health Science, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300, Kuala Nerus, Terengganu*
[2]*School of Biomedicine, Faculty of Health Science, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300, Kuala Nerus, Terengganu*
[3]*Faculty of Medicine, Universiti Sultan Zainal Abidin, Medical Campus, 20400, Kuala Terengganu, Terengganu*

**Corresponding author (email):* si3346@putra.unisza.edu.my

Abstract

Obesity and iron deficiency anemia are prevalent health problems that affected billions of people all over the world. Obesity is believed to be connected with iron deficiency via lowering intestinal iron absorption due to increased hepcidin levels mediated by chronic inflammation. Current evidence suggests that weight loss in individuals with overweight or obesity could be associated with an improvement in iron parameters. The current study was conducted to evaluate the effect of weight loss on iron status among young Jordanian women with overweight and obesity and iron deficiency anemia. A total of 62 young women with overweight and obesity and iron deficiency anemia were randomized into two groups. These are preliminary findings from 51 participants who already completed the trial. The intervention group (n=26) underwent a weight loss intervention program, whilst the control group (n=25) followed their usual care. Anthropometric and hematological parameters were measured at the start and end of the trial. The intervention group had 7.6% weight loss, whereas the control group had 0.3% weight loss. A significant increase was observed in hemoglobin level in the intervention group by 0.5 g/dL ($P<0.05$), whilst the change among participants in the control group was not significant by 0.1 g/dL ($P>0.05$). Mean corpuscular volume (MVC) was elevated from 74.8 to 77.7 fL ($P<0.05$) and from 74.1 to 74.4 fL ($P>0.05$) among participants in the intervention and control groups, respectively. In conclusion, our preliminary findings indicate that weight loss among participants might be associated with an improvement in iron-related hematological parameters.

Keywords: weight loss, iron, overweight, obese, young women, anemia

PREDICTORS OF THE RISK OF MALNUTRITION AMONG CHILDREN UNDER FIVE YEARS OLD IN CAPITAL SANA'A CITY, YEMEN

Emad A. Al-Shameri [1*], Ahmed H. Al-Shahethi [2,3], Sharifah W. Wafa [1]

[1] *Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Terengganu, Malaysia*
[2] *Ministry of Public Health and Population, Field Epidemiology Training Program, Yemen*
[3] *Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

**Correspondence author (email)*: alshameri79.ae@gmail.com

Abstract

Childhood malnutrition is one of the major public health challenges in Yemen. The aim of this study is to predict the major risk factors for malnutrition like stunting, wasting and underweight among children under five years' age in Sana'a city, Yemen. A cross-sectional community-based study was conducted among 434 children under five years' age in Sana'a city, Yemen during 1st August 2019 to 30 January 2020. A structured questionnaire was used to collect data that includes distal factors (socio-economic factors), intermediate factors (environment and maternal variables), proximal factors, anthropometric measurements (children and maternal) and maternal hemoglobin analysis. Results were analyzed using a bivariate and multivariable binary logistic regression model. The results showed that the prevalence of stunting, wasting, and underweight were 42.2%, 46.1% and 94 21.7%, respectively. Child's age 25-36 (AOR 2.12; P=0.031) and 37-48 months (AOR 2.29; P=0.022), father's education (AOR 2.82; P<0.001), used flush or pour toilet (AOR 1.96; P=0.01) and house size in family (AOR 0.62; P=0.021) were associated with stunting. Also, the child age of 1-12 months (AOR 3.8; P=0.005) and 37-48 months (AOR 2.57; P=0.023) and the weaning age of a child of 4-6 months (AOR 15.61; P=0.012) and 7 months and above (AOR 10.42; P=0.024) were associated with wasting. Statistically significant associations were observed between the family income of less than 50,000 YR (AOR 2.01; P=0.001), the weaning age of a child of 4-6 months (AOR 3.84; P=0.023) and 7 months and above (AOR 2.94; P=0.029), family planning practice (AOR 0.63; P=0.029) with underweight. The findings revealed that malnutrition was widespread among children under-five years of age. The nutrient-based interventions together with improved hygiene practices and household wealth should be targeted to improve the malnutrition situation in the study area and in the country.

Keywords: Malnutrition, children under-five years, stunting, wasting, underweight, Yemen