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▶ **INTELLECTUAL PROPERTY:**
 ▶ TRADEMARK
 ▶ PATENT



BOTANY
 Nutri Essence



Botany Nutri Essence



Introduction

Botany Nutri Essence is the breakthrough in plant nutrition, that contains complete, balanced and stabilized macronutrients, micronutrients, and enriched with specific bio-extract as growth booster and natural pesticides for fast yielding food crops. The unique invention has been supported by a full assessment of changing biochemical and physiological characteristics, enzymatic activities and defence mechanisms, and the associated health risks evaluation.



Intellectual Property Status, Novelty and Inventiveness

- Protected under Trademark and Patent: This Invention is Novel and Industrial Applicable
- Long shelf life
- Multimode
- Growth booster
- Pest control
- Health assurance
- Wide usefulness
- Economic feasible



Usefulness and Application of the Invention, Commercialibility and Market Potential

- Soilless cultivation
- Germination
- Feeding seedlings
- Transplants and clones
- Foliar feeding



Status and Completeness of the Invention/ Innovation

- Successful Innovation of a complete, balanced, and stabilized nutrient in a single formulation
- Integration of bio-extract for fast yielding food crops
- Scientifically driven analysis for safe and nutritious food crops production



Potential Collaborative Partners

- Accenture Tech
- Chong Kim Maju Enterprise
- Agrobiologic Green Exurb

Knowledge Management

- Awards: Gold Medal, International Malaysia-Indonesia-Thailand Symposium on Innovation and Creativity (iMIT-SIC)
- Grants: Research University Individual (RUI): 1001/PREDAC/814272; MTSF Science and Technology Research Grant: 304/PREDAC/6050358/M126
- Talent Development: 3 Postgraduate Students
- Publications: UNESCO Publishing, Book Chapter; iMIT-SIC Book Chapter; Journal of Cleaner Production; Journal of Water and Health; 37th International World Congress, Kuala Lumpur, Malaysia; 9th International Conference in Challenges in Environmental Science and Engineering (CESE), Kaohsiung, Taiwan; 2nd International Conference on Advances in Biotechnology, Kuala Lumpur, Malaysia

Knowledge Enhancement



Healthier Crops



100% Sustainable



○ **Researchers:**
DR. CHEW BEE LYNN
Assoc. Prof. Dr. Sreeramnan Subramaniam

▶ **INTELLECTUAL PROPERTY:**
TRADE SECRET



Tissue Cultured Fig Plants



Introduction

- The fig (*Ficus carica*) is known for its high nutritional qualities and its religious significance.
- The fig fruit contains elevated levels of calcium, phenolic compounds, antioxidants, minerals, vitamins and dietary fiber with its leaves possessing effective anti-diabetic properties.



Problem Statement

- Current propagation measures in producing plant stocks via cuttings, grafting and air layering produces lower rates of success
- Plant stocks propagated via these methods are slow growing and produce lower number of fruits.



Inventiveness and Novelty

- Malaysia's first successful tissue cultured fig plant stocks made available for the community and industry



Intellectual Property Status

- IP is owned 100% by Universiti Sains Malaysia (filed under trade secret)

Usefulness and Application

- Plants can be grown in the local fields where fruits and leaves can be harvested for fresh produce or processed for the food and pharmaceutical industry.



Status of Invention

- Product is ready for commercialization.

Commercial Potential

- Great demand in Malaysia and the ASEAN region for high quality fig plant stocks for the establishment of farms.
- This indirectly increases the demand of fresh fig fruits from the supermarkets and various industries (Sunnah and pharmaceutical product development proudly made in Malaysia)

Potential Partners

- Fig Direct Sdn. Bhd.

Knowledge Management (Grant/Publication/etc)

- USM Innovation Seed Fund and USM Research University Top Down Grant.
- Publications in manuscripts and proceedings

Impact of the Product

- Assist the establishment of fig farms in Malaysia through the supply of high quality plant stocks
- Create new job opportunities, increase income generation of local growers and encourage local entrepreneurs in the industry of fresh and processed Sunnah produce, cosmetics, wellness and pharmaceutical products



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ASSOC. PROF. DR. MOHD SALMAN ABU MANSOR
 Muhammad Fariz Mohamed Zailan



INTELLECTUAL PROPERTY:
 ► COPYRIGHT (LY2019001878)

USM CNC Editor



Introduction

- Post processor is required for converting machining data from Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) software to Computer Numerical Control (CNC) machine.
- Unfortunately, the post processor is quite expensive and can only be used by one user per computer at a time.
- Due to a high demand on CNC machining tasks, hence the machining data from CAD/CAM software have to be generated by a number of users in parallel.

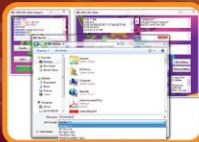


Problem Statement

- The main drawback is the post processor cannot be used by many users at the same time since it:
 - (i) limits the number of users,
 - (ii) requires a long lead time and
 - (iii) involves high cost implication if more than one computer needs to be used concurrently.

Inventiveness and Novelty

- A new interface namely **USM CNC Editor** is invented as an alternative in order to overcome the main drawback by customizing its output based on CNC machine specification.
- Two new features are provided in **USM CNC Editor**:
 - (i) "Quick generation of machining data format" and
 - (ii) "Quick inspection of machining data format".

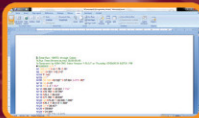


Intellectual Property Status

- **USM CNC Editor** has received a Copyright © 2019 (LY2019001878)

Usefulness and Application

- **USM CNC Editor** is used for editing the machining data in order to suit the CNC machine specification.
- **USM CNC Editor**:
 - (i) allows unlimited users,
 - (ii) shorten the lead time and
 - (iii) reduce the cost implication in the process of converting machining data.



Status of Invention

- **USM CNC Editor** has been tested and used.

Commercial Potential

- **USM CNC Editor** has a very high potential to be marketed for CNC machining.

Potential Partners

- The potential partners are:
 - (i) higher learning institutions,
 - (ii) training centres and
 - (iii) manufacturing industries which are related to CNC machining.



Knowledge Management (Grant/Publication/etc)

- Special thanks to Universiti Sains Malaysia for supporting this research project under the Research University Grant (Reference No: 814247).
- Related Publications in Scopus are as follows:
 - [1] A Rule Based Method to Auto-recognize Fillet Features of B-Rep Mill Parts, Engineering Applications for New Materials and Technologies. Advanced Structured Materials, Vol 85. Springer, Cham, 105-114, 2018.
 - [2] Validation of auto-generated material removal volume for regular form milling part, IOP Conference Series: Materials Science and Engineering, 429, 2018.



Impact of the Product

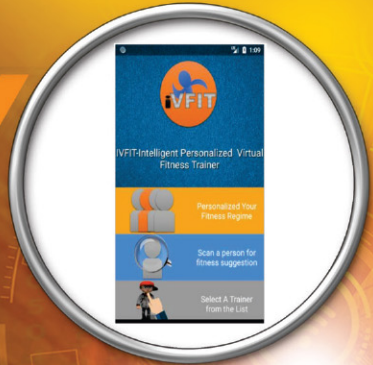
- Throughout this invention, **USM CNC Editor** can provide another opportunity and alternative solution for CNC machining in local and global markets.
- In addition, it is also can increase flexibility in Industrial Revolution 4.0 and future manufacturing industries.



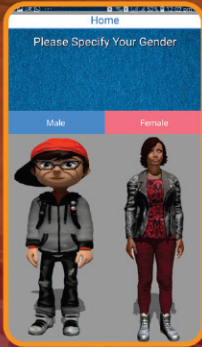
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○ **Researchers:**
DR. NUR AZLINA MOHAMED MOKMIN
 Assoc. Prof. Mona Masood

▶ **INTELLECTUAL PROPERTY:**
 COPYRIGHT (LY2018006398)



IVFIT - Intelligent Virtual Fitness Trainer



Introduction

IVFIT is an intelligent virtual fitness trainer that utilized the study on fitness in health education and facilitated with the technologies from the field of Artificial Intelligence and Virtual Reality.

Problem Statement

Obesity was the underlying factor for chronic diseases. Malaysia is ranked sixth in the Asia-Pacific region for obesity and tops the list in South-East Asia for both obesity and diabetes. Fitness activity with personalized fitness regime can help to cater the issues with overweight and obesity. This app solves the issue by intelligently personalized fitness activity using information from the users.

Inventiveness and Novelty

This app utilized the technology of AI and VR to intelligently suggest the most suitable trainer based on profile submitted (weight, height, age, activity level and gender). There are five different 3D virtual trainers with five different type of movements for fitness. This app also has an image recognition function, BMI and BMR calculation and calories intake suggestion. This app is user-friendly with informative user input, accurate with low prediction error and the suggestion are based on the study on health and fitness education.

Intellectual Property Status

Obtained: LY2018006398

Usefulness and Application

1. Can be used by anybody for BMI and BMR calculation and for Fitness
2. Personalized Fitness Activity
3. Low prediction error
4. Personalization is based on previously stored data
5. Can be used by anybody that wanted to learn to dance, combat and workout for fitness

Status of Invention

Completed and commercialized via App Store

Commercial Potential

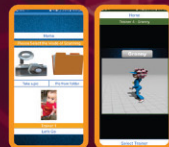
Can be commercialized worldwide
 Potential Partners
 Hospitals, Fitness Centers, Schools for Physical Education.

Knowledge Management (Grant/Publication/etc)

Paper title: The Effectiveness of a Personalized Virtual Fitness Trainer in Teaching Physical Education

Impact of the Product

Interviews (primary school students) – The students expressed their excitement about using the VFTs to perform different physical exercises.
 The app can accurately calculate and assign the trainer for each user based on 23 user data.





○ **Researchers:**
ASSOC. PROF. IR. DR. CHEAH CHEE BAN

Shafarina Jasme
Chow Wee Kang
Lim Jay Sem
Tan Leng Ee

▶ **INTELLECTUAL PROPERTY:**
PATENT FILED (PI 2019000720)

BIO-CRETE: The Light Weight Slag Fly Ash Biomass Composite for Building Structure



Introduction

- BIO-CRETE is a light weight, low carbon foot print and cost-effective bio-composite structural material for rapid building construction

Problem Statement

- Housing supply and demand data compiled by National Property Information Centre and Department of Statistic for the period 2005-2015 shows a diverging trend between housing demand and supply in Malaysia with a consistent shortage of supply of houses in the order of 2.0-2.5 million per year.
- Currently, the average house price to income ratio is 4.4 which makes the houses seriously unaffordable by international standards of housing affordability classification.
- The fast depleting source of sand and rock which are non-renewable natural sources drives prices of construction materials upward which worsens the situation further.



Inventiveness and Novelty

- Light weight structural element design which combines plant based material as aggregate and the slag and fly ash sources.

Intellectual Property Status

- Patent filed. Structural Cementless Coal and Biomass Composite. PI 2019000720.

Usefulness and Application

- Suitable as structural wall, non-structural wall and door or window frame.

Status of Invention

- Full sized prototype house system available.

Commercial Potential

- The housing shortage offers huge market potential for commercialization of rapid construction technology.



Potential Partners

- Macro Dimension Concrete Sdn Bhd
- Ascension Technology Sdn Bhd
- Lembaga Kenaf dan Getah Negara
- Affordable Abodes Sdn Bhd

Knowledge Management (Grant/Publication/etc)

- Development funded by Prototype Research Grant Scheme (PRGS) Ministry of Education.

Impact of the Product

- Affordable homes for the B40
- Carbon footprint reduction of wall materials by up to 70%
- Reduction in self-weight of wall by 75%.
- Improved thermal insulation property by 45% as compared to conventional brick or concrete walls.
- 57% reduction in construction time of building walls.
- Use of plant based renewable raw materials

Researchers:

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Abd Rahman Md Ibrahim
Mohd Husni Abdul Aziz
Mohamad Azuwan Abu Bakar
Dr. Ooi Cheong Hwa
Assoc. Prof. Dr. Ahmad Munir Che Muhamed



INTELLECTUAL PROPERTY:
▶ COPYRIGHT (AR2017002403)

PRO-Gait 17



Introduction

- Several diseases such as spinal cord injuries and stroke are common precursors for developing a physical impairment like walking disability.
- The conventional training methods with hands-on supervision by therapists is effective.
- Nevertheless, great labor intensive for the therapists to assist the patient

Problem Statement

- The customer complains the quality of treatment they received
- Many patients took more than 12 months to recover.
- Analysis of the work satisfaction level amongst therapists at the Rehabilitation Service showed work burden scored the lowest.
- Gait training was done manually, separately and it took too much time

Intiveness and Novelty

- PRO-Gait 17 is a combination of several walking tools such as a wheelchair, parallel bar, elliptical trainer and walking frame. The hoist and harness are embedded in PRO-Gait 17 to support patient and the application of elliptical movement to stimulate the patient to walk in a normal gait according to the standard gait phase. PRO-Gait 17 featured with a stable base, an ergonomic hand pedal, strong frame which can support weight over 200 kg, adjustable safety harness and wheels with safety brake for safety purpose, and an adjustable leg cuff to coordinate leg during walking treatment.

Intellectual Property Status

- Copyright filed : AR2017002403

Usefulness and Application

- 4 in 1 product- Eco-Saving, User-Friendly, Affordable, Portable

Status of Invention

- Prototype done
- Upgrading to semi-auto product

Commercial Potential

- The cost only RM3000, cheaper than other high technology machine for gait training

Potential Partners

- Community based-rehabilitation center
- Rehab center
- The social welfare service department
- Old folks home
- Industrial training and rehabilitation center
- Public and private hospital
- Pharmacy

Knowledge Management (Grant/Publication/etc.)

- Grant DIA USM

Impact of the Product

- Reduce time spent on gait training by 50%, Increase the level of the patient's balance, increase the efficiency rate of the therapist

APPLICATION OF THE PRODUCT

 1. Used for gait training for paraplegic patients	 2. Also for patient training for the PRO-Gait 17
 3. Helping patients with gait training who are unable to walk	 4. Also for training leg muscles for stroke patients
 5. Patients can use the PRO-Gait 17 for home training	 6. Also for patients' leg strength training
 7. Patients can use the PRO-Gait 17 for training	 8. Patients can use the PRO-Gait 17 for training



Researchers:
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 Dr. Syed Mohamad Syed Abdullah
 Dr. Rabiatul-adawiah Abdul Rashid
 Syamsol Azhar Zulkaffli

INTELLECTUAL PROPERTY:

- ▶ TRADEMARK (2014001647)
- ▶ COPYRIGHT (LY2018003944)
- ▶ COPYRIGHT (LY2018003945)
- ▶ COPYRIGHT (LY2018003946)
- ▶ COPYRIGHT (LY2018003947)



The Enhancement of Knowledge on Bully Module – 2BS Program: I'm A Buddy Not A Bully



Introduction

The Enhancement of Knowledge on Bully Module – 2BS Program: 'I'm A Buddy Not A Bully' aims to address the increasingly serious phenomenon of bully among students in schools.

Problem Statement

At present, the bully phenomenon has escalated rapidly based on the rising numbers of students' death pertaining to bully cases. Previous studies illustrated that there is a strong relationship between students' knowledge on bullying with the level of bullying.

Inventiveness and Novelty

This module is developed based on credible educational theories with comprehensive field research. The interactive module employs fun and creative pedagogy as well as using a game-based learning method.

Intellectual Property Status

Trademark in Malaysia for 2BS program: 'I'm A Buddy, not a Bully, (2014001647)

Copyright (Intellectual Property Corporation of Malaysia- MyIPO)
 Module 1 – Sahabat Sejati (LY2018003944), Module 2 – Ekologi Buli (LY2018003945), Module 3 – Tribunal Buli (LY2018003946) & Module 4 – Hati Buddy (LY2018003947)



Usefulness and Application

There are four series in this module and each series has a distinctive theme of knowledge on bullying. Each module can be combined with other series in a bigger program. Programs/classes can be self-administered by teachers, counsellors or facilitators using the module. The modules are equipped with notes related to the content and the equipment for the activities.



Status of Invention

This module is a ready-to-use product and now is undergoing extensive promotional period. This module is in the process of being published internationally with PERKAMA International Malaysia (Association of Malaysian Counselling International). This module has been used in 2Bs Program: 'I'm A Buddy not a Bully that has been implemented in schools in Penang and Perlis.

Commercial Potential

No competitors, in line with local culture and values. Marketable to the worldwide.



Potential Partners

PERKAMA International – for the counsellor, MARA – MRSM, Ministry of Education (MOE) – Secondary School, IPG, Higher Education Institutions and Ministry of Women, Family and Community Development.

Knowledge Management (Grant/Publication/etc.)

Published in Scopuz, ISI proceeding and international monograph
 Successfully obtained the Fundamental Research Grant Scheme (FRGS) and (RUI) Individual.



Impact of the Product

Provide a safe learning environment for all students without fear of being in school. Contributes to the well-being of students towards holistic development.



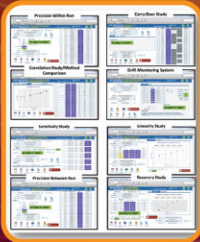
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 Nur Hikmah Ramli
 Norhiman Ahmad
 Ahmad Firdaus Abdul Hadi

INTELLECTUAL PROPERTY:
 ► COPYRIGHT (CRLY00009308)



e-MEVA (E-METHOD VERIFICATION)



Product tagline: *"In-house local brand that meets the international standard, user friendly, stable, secured and ISO compliance in laboratory testing"*

Introduction

- e-MEVA software platform offers basic and advanced data verification analysis and managing information of diagnostic test method for Medical Diagnostic Laboratory or Research Institute that has variety of high-tech testing equipment with high samples load.
- Its ease of use; efficient system; flexibility and scalability make it accessible to user with all skill levels to follow the International Standard Organization (ISO) and ensure the laboratory accreditation achievement status is maintain.

Problem Statement

- Data verification method for a laboratory is a complex task and most importantly must fulfill the ISO
- Inaccurate laboratory results lead to medical error that complicates patient management decision.
- Unfortunately, the process involves manual data entering, abundance of tedious steps with difficult and sophisticated formula *which lead to human error and stress*.

Inventiveness and Novelty

- Fulfill the ISO 15189:2014 and ISO 900:2008, 15189 and 17025
- The analyzed data by e-MEVA software is 100% similar with using SPSS (Statistical Package for the Social Sciences) program

Intellectual Property Status

- Copyright Notification No: CRLY00009308

Usefulness and Application

- e-MEVA has **TWELVE (12)** sophisticated verification function or test method
- Automated data calculation with a wide range of algorithms and capabilities and graphical data-science
- User password; secured data safety; download function; printing the analyzed results and notification system for next verification process

Status of Invention

- Ready for commercialization
- *Current user:* Hospital USM (Endocrine Lab/ Immunology Department/ Microbiology Department/ Pharmaceutical Lab/ Therapeutic Drug Administration Unit)

Commercial Potential

- All Medical Diagnostic Lab / Research Institute (Public & Private) Malaysia and South East Asia.

Potential Partners

- Not obtained yet

Knowledge Management

- Innovation Seed Fund 2019 from Universiti Sains Malaysia

Impact of the Product

- The institution able to achieve or maintain the consistency of their laboratory operation and international quality recognition
- Improve management efficiency, minimize risk and safe money
- Able to help organization anticipate changes and take action to improve outcome



Contact Person: ○

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Professor Dr. Zamzuri Idris

Dr. Low Peh Nueh

Abdul Manaf Abdullah

Suzana Mohd Yahya

Johari Yap Abdullah

INTELLECTUAL PROPERTY:

- ▶ COPYRIGHT (LY2019000404)
- ▶ PATENT



Patient Specific Implant Hybrid Cranioplasty



Introduction

- This invention developed a patient-specific implant hybrid cranioplasty.
- Cranioplasty is an elective procedure after recovery of life saving procedure of decompressive craniectomy.
- This reconstructive surgery is carried out to protect the underlying brain to help ensure the potential for recovery of the injured brain.

Problem Statement

- Current method of cranioplasty based on the skills of the surgeon whereby most of the small to medium size defect was topped up with alloplastic material on a free hand basis intra-operatively which often resulted in inaccurate implant approximation with unsatisfactory cosmetic result.



Inventiveness and Novelty

- Generating virtual 3D implant by mirror imaging, 3D print and form a mould by using a 3D printed model.
- Placement of autologous bone in a mould and topped up with alloplastic material to form hybrid cranioplasty implant.



Intellectual Property Status

- Copyright
- Filed for patent

Usefulness and Application

- Reduce operating time
- Aesthetic
- Applicable to patient with cranial defect



Status of Invention

- Already applied to 13 patients at HUSM

Commercial Potential

- 10 cases/month (HUSM alone)
- All hospitals included general and private hospitals

Potential Partners

- USAINS and 3D Gens



Knowledge Management (Grant/Publication/etc)

- Research University Grant (RUT 1001/PPSG/852004) and (RUI 1001/PPSG/8012241)
- Publications: 1 Scopus, 1 submitted to Journal of Craniofacial Surgery
- Students: 1 Graduated MMed Neurosurgeon

Impact of the Product

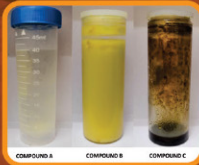
- Computer assisted modelling lead to high dimensional accuracy resulted to an aesthetical implant
- Reduce rejection and donor site morbidity by using patient's own bone
- Patient regain self confidence
- Affordable

○ **Researchers:**
ASSOC. PROF. DR.
WAN FATMA ZUHARAH WAN MUSTHAPA

▶ **INTELLECTUAL PROPERTY:**
 ▶ PATENT APPLICATION IN PROGRESS
 ▶ COPYRIGHT (LY2019000216)



Mozzie OFF Natural Insect Repellent: Water Gel Formulation

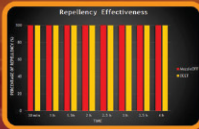


Introduction

- This MozzieOFF insect repellent water gel formulation is formulated using green management technology
- A fusion of this extracts promises of full protection for four hours against the main pest and vector mosquitoes; *Aedes albopictus*, *Aedes aegypti*, *Culex quinquefasciatus* and *Anopheles maculatus*.
- The invented technology will repel the mosquitoes using three different actions by releasing top, middle, and bottom notches at different times.

Problem Statement

- Pharmaceutical Information Associates Ltd. reports, "Up to 56% of DEET applied topically penetrates intact human skin and 17% is absorbed into the bloodstream."
- Health Canada has now banned products with DEET concentration over 30%



Inventiveness and Novelty

- The fusion of plant extract and essential oils are formulated at different mixture to produce high repellency towards all mosquito pest and vectors
- Designed on the three-notch release actions:
 - (A) Top Notch – Releasing the first odour of plant extract that can repel *Aedes*, *Anopheles* and *Culex mosquitoes*
 - (B) Middle Notch - Releasing the second odour of plant extract that can repel *Aedes* and *Anopheles* mosquitoes
 - (C) Bottom Notch - Releasing the third odour of plant extract that can repel *Aedes* and *Anopheles* mosquitoes

Uniqueness

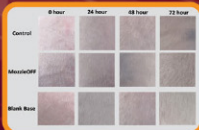
- DEET Free
- Full repellency for 4 hours
- Bio-natural botanical product
- No irritation reaction and toxic free
- Safe for children

Intellectual Property Status

- Copyright (Application No. LY2019000216)
- Patent Application in Progress. This Invention is Novel, Inventive & Industrial Applicable

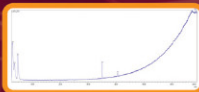
Usefulness and Application

- Easy to apply and user-friendly
- Press the nozzle. Apply the coin size dots on the palm and apply on all exposed skin. Reapply the gel every 3-4 hours for the best results



Status of Invention

Ready to be commercialized



Commercial Potential

- This product has a huge market especially in the countries that prone to vector-borne diseases such as dengue, Zika, Chikungunya, JE, Yellow fever and malaria; especially those living in the Asia Pacific.
- It is suitable for people having outdoor activities, school children, parents, hikers, anglers, jogger, people working outside of the office (JPAM), policeman, military, rangers, fisherman, farmers etc.)

Potential Partners

- Asiatic Agricultural Industries Pte Ltd
- Unit Entomologi & Pest, Jabatan Kesihatan Negeri Sabah

Knowledge Management (Grant/Publication/etc)

Funding: RESEARCH UNIVERSITY GRANT USM 1001/PBIOLOGI/815079 New method in controlling and combating dengue vector mosquitoes.
Publication: Tropical Biomedicine and Asian Pacific Journal of Tropical Biomedicine.
Human resource: 1 PhD and 5 Bsc.

Impact of the Product

- Enhance the quality of life by protecting human life by reducing the transmission of vector-borne disease
- Can be benefited by the bottom billion and affordable to own the product



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INTELLECTUAL PROPERTY:

▶ COPYRIGHT (LY2019001997)



Sustainable Ankle Foot Equipment (SAFE)



Introduction

- Ankle deformity caused by weakness or paralysis of the muscles involved in lifting the front part of the foot.
- High steppage gait makes walking difficult or impossible – need to lift thigh higher to avoid dragging their toes during walking.
- The most common cause of foot drop is injury to the peroneal nerve; occurs on patient with stroke, cerebral palsy, spinal injury or head injury

Problem Statement

- Easily get sweating which causes skin infection
- Difficult to walk on sloped surface due to rigid ankle joint
- Less adoption by patient due to discomfort and inconvenience
- Unable to monitor patient's usage and treatment progress accurately
- Imported model is expensive (~RM1000 each)



Inventiveness and Novelty

- Breathable and lighter design
- Flexible ankle allows mobility
- Easily adjustable strap for comfort fit
- Easy wear slipper for outdoor use
- Wireless monitoring with unique mobile apps

Intellectual Property Status

- IP protected (Copyright) for the design and monitoring module



Usefulness and Application

- Comfortable design for treatment of ankle deformity
- Monitoring of steps, calories and distant travelled
- Practical design for indoor and outdoor use
- Affordable to low income group

Status of Invention

- Completed prototype for laboratory testing

Commercial Potential

- Similar product has been used in HUSM
- 220 hospitals nationwide with annual market size of RM2.2 millions

Potential Partners

- Hospital USM
- Malaysian hospitals
- Healthcare

Knowledge Management (Grant/Publication/etc)

- 3 Journal publications

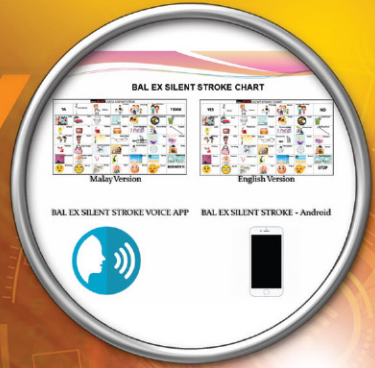
Impact of the Product

- Enhanced treatment effectiveness
- Affordable to lower income group
- Improved quality of life



Researchers:
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INTELLECTUAL PROPERTY:
 TRADEMARK REGISTERED
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Bal Ex Silent Stroke Devices



INTRODUCTION

- The BAL EX SILENT STROKE CHART is an inventive product resulting from collaboration among medical, nursing and occupational therapist experts.
- This clinical product is affordable as it is extremely cost-effective and was invented to improve post stroke or head trauma patients communication
- Available in Multilingual's and different mode (Chart (A4 & A3 size), android and Audiovisual application)

PROBLEM STATEMENT

- Globally, stroke are common (affecting 1 in 10 people), serious and complicated.
- No structured stroke rehabilitation available in video form to assist/ guide stroke patients.
- Stroke can lead to
 - Psychological symptoms (e.g. depression)
 - Communication problem (1/3 of stroke cases faced communication)
 - Social impacts (e.g. isolation)
 - Vocational impacts (e.g. problems carrying out job appropriately)
 - Impaired quality of life (e.g. cannot function normally in daily life)



INVENTIVENESS AND NOVELTY

- This clinical product is affordable as it is extremely cost-effective (costs less than RM20~RM 100)
- Was developed by doctors, occupational therapist, nursing and computer programmer



INTELLECTUAL PROPERTY STATUS

BAL EX Trademark has been registered
 COPYRIGHT for poster, audio-visual system and Android pdf form under USM & MyIPO

USEFULNESS AND APPLICATION

- Suitable for daily communication between post stroke cases and caregivers
- Improved patient and caregiver communication



STATUS OF INVENTION

Completed and ready to used.

COMMERCIAL POTENTIAL

- 50 000 cases each Year NASAM 2017
- Targetted local distributors such as:
 - Private Hospitals
 - Private Clinics
 - Medical & Health Sciences Institutions
 - Ministry of Health Centers: General Hospitals, Rural Clinics and Health Clinics.
- International distributors (English, Malay, Chinese, Japan Indonesia, Tamil and Arabic language)



POTENTIAL PARTNERS

- Eartistic Hearing and Balance Sdn Bhd
- Orbit Mekar Sdn Bhd
- Olive House Cyberjaya
- Smile Homecare

KNOWLEDGE MANAGEMENT (Grant/ Publications/ etc)

- Publication
- Usefulness of Bal Ex Silent Stroke Chart for post stroke communication; A case study.
- Grant
- Dana Inovasi awal 2019 (RM 25 000)



IMPACT OF THE PRODUCT

- Improve patients and caregivers communication
- Improve patient quality of live
- Better care for post stroke and head trauma patients



○ **Researchers:**
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 Mohamad Ezany Yusoff
 Haswati @ Nurhayati Abdullah

▶ **INTELLECTUAL PROPERTY:**
 ▶ TRADE SECRET



MOFRESH



Introduction

- Most local herbal-based toothpaste in the market is fluoride-free

Problem Statement

- Fluoride at suitable concentration in toothpaste is needed to prevent tooth cavity
- Triclosan, the antibacterial agent, added in the toothpaste provides additional benefit to oral hygiene and gingival health
- Triclosan is categorized as potentially toxic to human and ecosystem

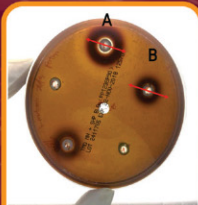


Inventiveness and Novelty

- MoFresh, our fluoride-toothpaste contains herbal-based antibacterial agent is introduced to solve these problems

Intellectual Property Status

- Trade secret for formulation has been approved. Copyright for brand name and packaging is in progress. Patent for formulation will be applied



A= Commercial toothpaste with triclosan
 B= MoFresh

Usefulness and Application

- MoFresh is an alternative fluoride-toothpaste with a herbal antibacterial agent which is safe for human usage and ecosystem, at an affordable price

Status of Invention

- Prototype

Commercial Potential

- Toothpaste is an essential product consumers cannot do without

Potential Partners

- AZYM SYNERGY SDN BHD

Knowledge Management (Grant/Publication/etc)

- Short term grant 304/PPSG/61313196



Impact of the Product

- MoFresh is an alternative fluoride-toothpaste containing herbal-based antibacterial agent
- The toothpaste has a potential for industrial bioeconomy contributing to Industry 4.0

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INTELLECTUAL PROPERTY:

▶ PATENT FILED (PI 2018704309)

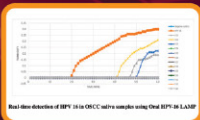
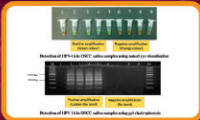
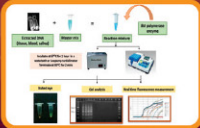


Oral HPV-16 LAMP Kit

Rapid detection of Human Papillomavirus 16 DNA in tissue, blood and saliva specimens of oral cancer



A 66-year-old Malay woman presented with oral squamous cell carcinoma of the left mandibular edentulous ridge with palatal extension (Intra-Image Courtesy of Prof. Shafiqul Akbar Rahman)



Introduction

- Human papillomavirus (HPV) 16 is a major oncogenic factor in oral cancer and high prevalence in Malaysia (51.4%) (Saini et al., 2011).
- HPV+ oral cancer has better response to chemo-radiation therapy and 74% reduction of death risk (Taberna et al., 2017).

Problem Statement

- p16 IHC - expensive, requires a skillful technician, time-consuming, difficulty to interpret by pathologist due to subjectivity of assessment and low specificity (46-78%)

Inventiveness and Novelty

- To the best of our knowledge, no commercial loop-mediated isothermal amplification (LAMP) kit for detection and quantification of HPV 16 in tissue, blood and saliva of oral cancer is available in the market.
- Oral HPV-16 LAMP offers a rapid, cheap, highly sensitive, specific, and simplified quantitative method for HPV16 detection.

Intellectual Property Status

- Patent filed (PI 2018704309)

Usefulness and Application

- Oral HPV-16 LAMP kit is useful in
 - classification of HPV (+) and HPV (-) oral cancer,
 - SCC of unknown primary with neck nodes,
 - saliva screening for early detection and preventive strategies.

Status of Invention

- Final lab-scale

Commercial Potential

- High incidence of HPV+ oral cancer in developed countries.
- Malaysia & International market.

Potential Partners

- Healthcare companies and private laboratories.

Knowledge Management (Grant/Publication/etc)

- eScienceFund Grant (02-01-05-SF0710)
- Publications: 1 published, 2 submitted (ISI and Scopus).
- Presentations: Scientific conferences, Travel Awards (Korea and Thailand)
- Students – 1 PhD, 1 Msc

Impact of the Product

- Rapid (1 hour)
- Cost-effective
- Sensitive and specific (100%)
- Pre-optimized master mix in a single-tube assay minimize pipetting steps and reduce contamination.
- Ready to use, easy to perform (addition of sample and enzyme polymerase only)
- Quantitative (Viral Load)



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INTELLECTUAL PROPERTY:
▶ COPYRIGHT (LY2018004795)

MAIDS 5



INTRODUCTION

MAIDS 5 is an innovative 5 functions in 1 rehabilitation tool / equipment to help patient with gross and fine motor problems in paediatrics.

PROBLEM STATEMENT

- There is an increasing trend in statistics of patient with gross and fine motor problem such as Cerebral palsy, Global Development Delay and others that come for treatment in our Hospital USM Rehabilitation Centre.
- Rehabilitation treatment has become quite challenging due to poor or lack of rehabilitation tools to treat these patients optimally.
- As a result, many of our patients end up with preventable complication such as poor posture and spasticity.

INVENTIVENESS & NOVELTY

- Creation of MAIDS 5 is based on our collective experience during managing these patients.
- Annual increasing trend in number of paediatric patients, compare to the unchanging (static) number of therapists.
- Existing tools are expensive and difficult to obtain.
- Limited functions of available equipment
- Limited resources and supplier.

INTELLECTUAL PROPERTY STATUS

- MAIDS 5 has been copyrighted with MyIPO by the USM organization (LY2018004795)

USEFULNESS & APPLICATION

OBJECTIVE:

- To provide a multifunction rehabilitation tool in optimising management of paediatrics patients.

PROBLEM SOLVING :

NO.	PROBLEM	SOLUTION FROM INVENTION
1	Limited function	Multifunction
2	Expensive	Affordable price and cheaper
3	Difficult to obtain	Local product, local expertise and custom made. (Design and Assemble in Malaysia).
4	Frequency of treatment	Patient can practice at home

USEFULNESS AND APPLICATIONS :

- MAIDS 5 integrates multiple functions and training in one product for better clinical benefits.
- For sitting, standing, walking, as a stroller and use for fine motor activities
- To stimulate and improve gross and fine motor development
- Prevention of complication such as poor posture/ deformity / spasticity.
- Improve efficacy of rehabilitation intervention / reduce workload to the therapists
- Cost saving, contribute to industry and generate income to the nation.

STATUS OF INVENTION

- Completed. Technology Readiness Level (TRL) 8
- Have a prototype for demonstration
- Tested by internal and external professionals.
- Ready to be commercialized internally to clients at Rehabilitation Unit of Hospital USM and externally to the whole world.

MARKET & COMMERCIAL POTENTIAL

- MAIDS 5 has many competitive advantages compared to imported products in market.
- Potential marketability of this product is high in Malaysia
- Will be commercialized in Malaysia
- In future, will be target worldwide market
- Raw Material Price per unit : RM 500 (all the materials are RoHS compliant, recyclable, reusable)

POTENTIAL CUSTOMERS:

- Individual and family
- Healthcare sector
- Manufacturing sector







