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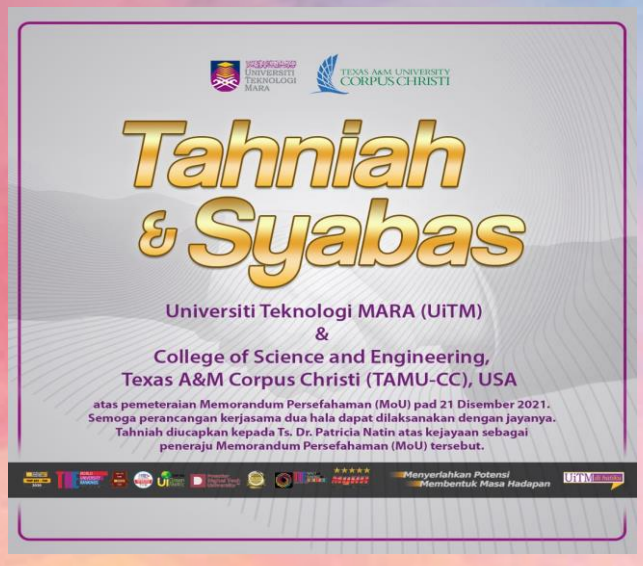


IN THIS ISSUE:

SERENDIPITY

Good luck in making unexpected and fortunate discoveries.

ANUGERAH KAMPUS LESTARI HIJAU 2021 ANJURAN UiTM GREEN CENTRE (UGC)

Shirley Arvilla Andrew, Dr. Ajis Lepit dan Ansir Salim

SINOPSIS

Anugerah Kampus Lestari Hijau (AKLH) 2021 adalah salah satu aktiviti sepanjang Festival Kelestarian Kampus Hijau UiTM 2021 yang julung kali dianjurkan oleh UiTM *Green Centre* (UGC). Festival ini yang bertemakan "Gaya Hidup Lestari dan Sihat" telah berlangsung dari 1 November 2021 sehingga 24 Disember 2021 dengan majlis penutupan pada 10 Januari 2022. Penganjuran festival ini selaras dengan matlamat UiTM dalam mendokong agenda kelestarian dengan objektif meningkatkan kesedaran kepentingan kelestarian hijau dan mengamalkan gaya hidup lestari dan sihat serta memupuk sikap bertanggungjawab kepada bumi dan alam sekitar menerusi aktiviti kelestarian yang dijalankan. UiTM Cawangan Sabah (UiTMCSH) telah menghantar dua penyertaan untuk AKLH iaitu kumpulan yang diketuai oleh Dr. Ajis Lepit (Kumpulan Program Konservasi HPB UiTMCSH) untuk Kategori Kampus dan juga Puan Adelina Ebun untuk Kategori Fakulti.

Kumpulan Program Konservasi HPB UiTMCSH berjaya mendapat juara bagi Anugerah Kategori Kampus untuk Zon Sabah/Sarawak dan naib juara keseluruhan bagi Anugerah Kategori Video Terbaik Kampus/Fakulti/Unit/Kolej Kediaman. Laporan AKLH yang dihantar oleh Kumpulan Program Konservasi HPB UiTMCSH adalah program di bawah Fakulti Sains Gunaan (FSG) dengan kerjasama Pejabat Pembangunan Fasiliti (PPF) yang berfokuskan kepada kelestarian hutan paya bakau UiTMCSH yang telah bermula pada tahun 2019. Program ini adalah satu usaha proaktif untuk membangunkan kawasan hutan paya bakau UiTMCSH yang terbiar dan terancam dengan pembukaan tanah oleh penduduk tanpa izin. Cadangan pembangunan adalah berfasa iaitu Fasa pertama: Penyelidikan; Fasa kedua: Pendidikan dan Kesedaran Awam; Fasa ketiga: Ekonomi dan Fasa keempat: Pelancongan.

Semoga usaha untuk membangunkan kawasan hutan paya bakau UiTMCSH ini sentiasa mendapat sokongan dan kerjasama penuh dari semua pihak khususnya pihak pengurusan UiTMCSH dan semua warga UiTMCSH amnya agar objektif program dapat dicapai, justeru, memenuhi matlamat *Sustainable Development Goals* (SDG), SDG 14 (*Life Below Water*) dan SDG 15 (*Life on Earth*), SDG17 (*Partnerships for the Goals*).

Tahniah diucapkan kepada pelajar Pra Sains UiTM Cawangan Sabah kerana merangkul tiga pingat perak di PPT UiTM National Virtual Innovation Competition 2022 (PPTNVIC '22).

AUTHENTIC BIOBASED CO-KNEE CAP

Siti Aminah Mohammad, Lo Chor Wai, Farnidah Jasnie, Shirley Arvilla Andrew

Faculty of Applied Science

Abstract

Due to environmental and sustainability concerns, the development of bio-composites has resulted in remarkable advances in green technology in the field of materials science. Natural fibres, in particular, will reduce waste disposal issues as well as pollution. Coconut fibre is one of the natural fibres abundantly available in tropical regions, and the coconut (Cocos nucifera) is widely known as the "tree of life." Coconut fibres can act as a shock absorber and can be good material for protection used because its physical properties and its advantages where its texture is in bundles that are stiff, resilient, spongy, and pliable. It is also resistant to decay where it is highly resistant to microbial attacks when it is preserved. Attributable to these special features, coconut fibre-based Co-Knee Cap can provide commercial rivals. Co-Knee Cap promises safety features such as strong, light weight, can easily withstand heat and it is also in non-electroconductivity condition, where it can protect consumers and prevent injuries.

Keywords: *Bio-composite, natural fibre, coconut*

KIDDIE HAND SOAP

Ani Juaini Bahrin, Tutiyana Mohamed, Farhana Yaakub

Faculty of Administrative Science and Policy Studies & Faculty of Applied Sciences

Abstract

During this pandemic, hand contamination has been identified as one of the ways of disease transmission. Therefore, hand washing is the simplest and practical way for disease prevention. In school, it is very important to reinforce the importance of hand washing. Based on the study conducted by Pratinidhi et al (2020), 93% of the students were knowing the practice of hand washing while only 61% were using soaps in cleaning hands. As soap and water are very effective to remove dirt and germs, hence we would like to introduce a product of liquid hand soap known as Kiddie Hand Soap. By focusing children as the potential user, this product of natural origin serves several objectives. Firstly, this product was developed to cultivate hygienic practice i.e. hand washing among children. Besides that, this product also can be an alternative for conventional hand soaps that might not available at the toilets, canteens or restaurants, malls and etc. In term of benefits and usefulness, this product also safe for people with sensitive skin and allergies. This product is also a novelty and unique in nature as the combination of Castile liquid soap (mixed with extra virgin olive oil) are suitable for children. The essence from germ destroyer essential oil will protect kids from seasonal illness and support their respiratory system. This product is having high commercialization potentials, it is small, handy and easy to carry. It comes with attractive penguin bottles to attract potential buyers such as young children, parents and teachers.

Keyword: *hand soap, clean hands, germs*

E-NATIVE LAW KIT

Datin Dr. Rafidah@Malissa Binti Salleh, Lenny James Matah, Ku Mohd Amir Aizat Ku Yusof, Hershan@Ray Herman & Shirley Arvilla Andrew

Faculty of Laws & Faculty of Applied Sciences

Abstract

Article 161A of the Federal Constitution provides for the special position of natives of Sabah and Sarawak. The Native Courts Enactment 1992 is the law that governs the native legal system in Sabah. Even though native courts in the state existed hundred years ago, until today, it is submitted that there is not much development of the laws and the system of administration. Section 3(2) of the 1992 Enactment provides that a Native Court shall be presided by the Native Chiefs or Headmen. However, to date, it is still not clear how the qualifications of the native courts' personnel are determined. Although the native chiefs are well-versed in *adat* or customs, steps must be taken to educate them on the rule of interpretation and procedure. The approaches that are taken by the native chiefs in interpreting the law and deciding cases are very much related to the administration of justice. It is argued that a lack of formal education on the part of the Native chiefs could lead to the inefficiency of the administration of native law. Thus, the idea to create this **eNative Law Kit** is intended to make it easy for the native courts' personnel, especially the headmen, to understand the legal system better and get easy access to the provisions in the 1992 Enactment, judgments of previous cases, roles and functions of native courts personnel, and the procedures. Having a clear and better understanding of how the native court systems work is one way to prevent abuse of power and non-compliance of the legal process. The **eNative Law Kit** will consist of the Native Courts Enactment 1992, cases, forms, responsibilities, and duties of native courts' personnel. It can be downloaded on any smartphone and can be monitored and updated as appropriate. Finally, it can be patented, and a certain fee can be imposed before it can be downloaded.

***Keyword**: native legal system*, native courts' *personnel*, *eNative Law Kit*

NUTRACEUTICAL POTENTIAL OF TOLIDUS (*HORNSTEDTIA HAVILANDII (K. SCHUM) K. SCHUM)* FROM SABAH

Nadia Majitol, Farnidah Jasnie, Lo Chor Wai

Faculty of Applied Sciences

Abstract

Hornstedtia is a genus of the ginger family *Zingeberaceae* plant that mostly recognized for their medicinal properties, however *Hornstedtia havilandii* found in Sabah is less reported. The aim of this study is to investigate the phytochemical constituent and vitamin C content of *H. havilandii* fruit, locally known as *Tolidus* in Sabah. The dried fruit sample was extracted using maceration method with three different solvents which were aqueous, ethanol and *n*-hexane. The phytochemical constituents were determined to identify the potential bioactivity of *Tolidus* as antioxidant agent using standard Colour Test for the presence of flavonoid, tannin, terpenoid and phenol. The vitamin C content was determined using Colorimetric Titration and ascorbic acid as standard. The phytochemical evaluation showed that all targeted compounds were present except for terpenoid which was absent in fruit *n*-hexane extract. The vitamin C content in aqueous fruit extract, ethanol fruit extract and *n*-hexane fruit extract were 162.47 ± 0.70 mg/100mL, 401.55 ± 1.37 mg/100mL and 121.52 ± 1.47 mg/100mL respectively. These results are comparable to the content of vitamin C content in orange juice and lime juice respectively. The phytochemical evaluation and vitamin C content of *Tolidus* suggested the potential of this underutilise fruit to be natural and affordable source of vitamin C. Additionally it may protect the body against harmful free radicals and reduce complications of chronic diseases that are prevalent in today's society. However, further analysis is needed to determine other constructive natural contents and evaluate the efficacy of the fruit as natural antioxidant.

***Keywords**: Hornstedtia; Zingiberaceae; Tolidus; vitamin c; phytochemical*

A BRIEF PHYTOCHEMICAL DESCRIPTION OF *CURCUMA LONGA* (TURMERIC)

By Nurfateen Helmy Abdellah Nazeer, MSc Chemistry (AS756)

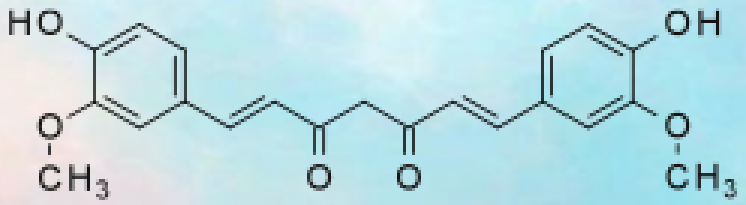
Turmeric is a spice that has captured the interest of both medical and scientific as well as culinary communities (Hewlings & Kalman, 2017). Turmeric or its scientific name is *Curcuma longa* is a rhizomatous herbaceous perennial plant with yellow flowers and wide leaves of the ginger family (Zingiberaceae) that grows in tropical climate (Indira Priyadarsini, 2014; Prasad *et al*., 2014). This perennial herb plant having a short stem with large simple oblong leaves while its rhizomes are oblong or ovate or pyriform in shape and are often branched. On the outside, the rhizomes are yellowish brown in color while orange color in the inside surface (Hegde *et al*., 2013).

Even though they possess the characteristic aroma that are slightly pungent bitter to taste, turmeric is needed in rice, pasta, meat and vegetables dishes and salads to add flavours and colours (Hegde *et al*., 2013; Kocaadam and Şanlier, 2015). The quality of a plant and its nutritional composition are vary depending to geographical conditions of the region from where it grows as well as the features of its soil (Hayakawa *et al*., 2014; Hossain *et al*., 2015). While this plant is mostly used as a spice in Iran, it is also a key component to give yellow colour in curries in Malaysia, India, China, Polynesia, and Thailand, as well as mustard and sauces in the West (Gupta *et al*., 2013).

Figure 1. Inflorescence of *Curcuma longa* (Private collection) (left). A dish of Nasi Kunyit (http://food.malaysiamostwanted.com/photo-tags/nasi-kunyit) (right).

Turmeric has been used in Asian countries as medicinal herbs due to its antioxidant, anti-inflammatory, anti-mutagenic, antimicrobial as well as anticancer properties (Lestari and Indrayanto, 2014; Mahady *et al*., 2002; Padmanaban and Rangarajan, 2005; Vera-ramirez *et al*., 2013; Wrighta *et al*., 2014). The main phytochemical that founds in the rhizomes of turmeric and in others *Curcuma* species is curcumin (1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione) also called as diferuloylmethane; a natural polyphenol (Aggarwal *et al*., 2003). This polyphenol has been identified to target several signalling molecules while also displaying cellular activity, lending support to its multiple health benefits (Gupta *et al*., 2013).

In Prasad *et al*., (2014) study, the compound of turmeric shows the contains of carbohydrate (69.4%), protein (6.3%), fat (5.1%), mineral (3.5%) and moisture (13.1%). He added that the essence of turmeric roots pulverized by drying contains curcuminoids as well which consist of curcumin components. The curcumin found inside turmeric shows its beneficial health to humans. It had proceeded with clinical studies conducted with humans and curcumin was found to be safe and effective to consumed (Kocaadam and Şanlier, 2015). The Food and Drug Administration (FDA) had confirmed that curcumin as a compound 'generally recognized as safe' (Patil *et al*., 2009; Prasad *et al*., 2014).



Curcumin

However, no high-quality scientific report has been published regarding its anti-disease effect (White et al. 2019).

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PROJECT TITLE: EXPLORATION OF THE SOIL BIOTAASSOCIATED TO *CASUARINACEAE* TREES FROM TROPICAL ULTRAMAFIC AREAS IN SABAH

By Dr Lo Chor Wai

Executive Summary

The ultramafic soils in Sabah (Malaysia) are renowned for its richness in nickel (Ni) hyperaccumulator floras. Intensive studies have been carried out on taxonomy and phylogeny of these Ni hyperaccumulators, their habitats and correlation between soil chemistry for its potential in phytoremediation. Some plant species native to tropical ultramafic areas can be useful tools for the restoration of soils degraded by human activities. Casuarinaceae trees are well known for their capacity to grow on nutrient-poor areas, and this is possible thanks to multiple adaptations, including the formation of actinorhizal symbioses with nitrogen-fixing *Frankia* actinobacteria. However, there is no report in the available literature on *Frankia* actinobacteria associated with the ultramafic outcrops in Sabah. The aim of this project is to accumulate information on soil biota associated to members of the genera *Gymnostoma* and *Ceuthostoma* (both from Casuarinaceae) from ultramafic areas of Sabah, with emphasis on the *Frankia* actinobacteria.

Research activities will include the sampling of soils and root nodules, the extraction and sequencing of bacterial DNA, and the isolation of Frankia strains in pure culture. The level of tolerance to nickel and magnesium by *Frankia* strains will also be tested.

In addition, the determination of plant growth-promoting properties may elucidate the role of *Frankia* actinobacteria to the growth of these plants for conservation as well as potential future utilisation in phytoremediation. It is believed that the symbiosis between plants and microbes can accelerate the elimination of environmental pollutants to achieve ecological sustainability.

***Keywords**: Soil quality, soil microbiology, soil ecology, biological remediation, biogeochemistry*

Ringkasan Eksekutif

Tanah ultramafik di Sabah (Malaysia) terkenal dengan kekayaan flora hiperakumulator nikel (Ni). Kajian intensif telah dijalankan ke atas taksonomi dan filogeni hiperakumulator Ni ini, habitat dan korelasi antara kimia tanah untuk potensinya dalam fitoremediasi. Sesetengah spesies tumbuhan yang berasal dari kawasan ultramafik tropika boleh menjadi alat yang berguna untuk pemulihan tanah yang terdegradasi oleh aktiviti manusia. Pokok Casuarinaceae terkenal dengan kapasitinya untuk tumbuh di kawasan yang kurang nutrien dan ini boleh dilakukan berkat pelbagai penyesuaian, termasuk pembentukan simbiosis actinorhizal dengan *Frankia* actinobacteria yang mengikat nitrogen. Walau bagaimanapun, tiada laporan mengenai *Frankia* actinobacteria yang dikaitkan dengan tumbuhan di ultramafik Sabah. Matlamat projek ini adalah untuk mengumpul maklumat mengenai kami tentang biota tanah dengan genera *Gymnostoma* dan *Ceuthostoma* (kedua-duanya daripada Casuarinaceae) dari kawasan ultramafik Sabah, dengan penekanan kepada *Frankia* actinobacteria.

Aktiviti penyelidikan termasuk pensampelan tanah dan nodul akar, pengekstrakan dan penjujukan DNA bakteria, dan pengasingan strain *Frankia* dalam kultur tulen. Tahap toleransi kepada nikel dan magnesium oleh strain Frankia juga akan dikaji. Di samping itu, penentuan sifat menggalakkan pertumbuhan tumbuhan boleh menjelaskan peranan *Frankia* actinobacteria kepada pertumbuhan tumbuhan ini untuk pemuliharaan serta potensi penggunaan masa depan dalam fitoremediasi. Adalah dipercayai bahawa simbiosis antara tumbuhan dan mikrob boleh mempercepatkan penghapusan bahan pencemar alam sekitar untuk mencapai kelestarian ekologi.

***Katakunci**: Kualiti tanah, mikrobiologi tanah, ekologi tanah, pemulihan biologi, biogeokimia*

RESEARCH AIM AND OBJECTIVES: FAILING TO PLAN IS PLANNING TO FAIL

By Julenah Ag Nuddin, PhD, MMIC

A new year is often regarded as a fresh start. For school children, it means starchy uniform and white shoes, bubbling excitement and eager hopes. Quite the contrary for working adults, setting yearly work targets in addition to 'old, to be continued' personal resolutions are always something that arouse anxious anticipation. The reason such feelings are stirred is due to our fear that we will not be able to achieve the goal upon evaluation at the end of the year.

Figure 1. The author was recently involved in a strategic planning workshop of an organisation which oversees the biodiversity of the state.

In a scientific study, research aim & objectives are an imperative section in a research proposal. In essence, they imply the vision and mission of the project besides informing the feasibility of the study in terms of specificity, either in qualification or quantification, within a realistic time frame. In every project, it is easy to expect the outcome, however, very often we lack the perception to view every possible viability to reach the final result. For that reason, having a well thought out and defined aim and objectives will guarantee positive ending.

A good construction of aim and objectives would require understanding the research project. This necessitates acquiring strong grasp of the study. Therefore, reading past reports would provide various perspectives and eventually, pointing out openings. Hence, research aim is a general statement of research study on disparity that will be corrected by your study. It should contain both object and subject of the investigation without providing detailed information. Meanwhile, research objectives will be statements written in a number of steps which describe sample preparation and processes up to the analysing techniques and program. They should be straight to the point without ambiguity to avert confusion especially in describing research activities that are to be performed. On top of that, any quantification works are expected to be reliably accurate since researchers are held accountable for their findings.

Sometimes, research objectives can be presented in other forms, as research questions or research hypotheses. There are apparent practices and differences in ways of writing research questions and hypotheses. Firstly, when the study is more qualitative, then, research questions would provoke relevant connecting inquiries. Whereas research hypotheses would be more appropriate when the probe is explorative as the objectives are required to be more general and open-ended to allow dynamic design.

Whichever approach in developing research aim and objectives, it is notable that they should not be written in a mixed format or combined paragraph. Furthermore, an effective research aim and objectives would provide gradual progression with significant outcomes. Once, these are all in place, the workflow of the study would become distinctively clear.

At the end of the year, it is satisfying to realise that the work has come to fruition. Nothing beats the feelings of having the work well done. You reap what you sow. All the best in planning and executing.

#**D**oa**U**saha**I**khlas**T**awakkal

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PERSATUAN SYNERGY

UNIVERSITI TEKNOLOGI MARA

LAPORAN AKTIVITI
SCIENERGY ANNUAL GRAND MEETING 2022

SCIENERGY ANNUAL GRAND MEETING 2022 ialah majlis rasmi yang telah diadakan untuk memberi laluan bagi pembubaran Majlis Tertinggi Sesi 2020/2021 dan pelantikan MT Sesi 2021/2022. Majlis ini dibuat sekali setahun di mana kesemua pelajar Fakulti Sains Gunaan diharuskan hadir. Selain itu, laporan aktiviti dan laporan kewangan Sesi 2020/2021 juga telah dibentangkan. Majlis ini telah diadakan pada 8 Januari 2022. Seramai 25 orang pelajar telah dicalonkan tanding kedudukan jawatan MT Persatuan Scienergy. Di akhir majlis, 14 orang pelajar yang telah memenangi undi terbanyak telah menyampaikan ucapan penghargaan kepada ahli MT yang lalu dan berjanji akan berusaha yang terbaik.

Gambar. Poster *Scienergy Annual Grand Meeting* 2022 (kiri). Para pelajar yang hadir semasa mesyuarat yang diadakan secara atas talian (kanan).