

CELEBRATING
COMMERCIALISATION
YEAR 2014

iiindex 2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

invention
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exposition 2014

INNOVATEUR
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2014

27th - 30th
APRIL 2014
DEWAN AGUNG TUANKU CANSELOR (DATC)
UNIVERSITI TEKNOLOGI MARA
MALAYSIA

*Bridging
the valley of death :
advancing the
commercialisation
of research*

RESEARCH BOOK

iiindex2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

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FOREWORD

The Honourable Minister of Science, Technology and Innovation (MOSTI) has launched 2014 as Malaysia Commercialisation Year 2014 (MCY2014) with the theme Science Technology and Innovation (STI) for Wealth Creation. In line with this theme, Invention, Innovation, Design & Exposition 2014 (iidex2014) is an annual exposition organized by UiTM and is the ultimate platform to highlight and commercialise new inventions and innovations. Researchers and inventors will exhibit their products which cater to the needs and wants of the community and the country.

The iidex2014 creates a new dimension by fusing two competitive concepts, a competition among innovative products and a competition to invite Innovateur Wannabes to perform live pitching of their products to the audience. The iidex2014 focuses on comprehensive commercialization and creating opportunities for entrepreneurs to carry out R&D as well as to provide avenue to commercialise their products. Through expositions such as iidex2014, MOSTI hopes to inculcate the culture of commercialisation of new technology designed and created by Malaysians.

I wish to congratulate all the participants of the iidex2014 and this is the opportunity for all researchers to show their ideas and exhibits their products and creativity. Apart from showcasing their products, innovators will have the opportunity to provide a window to the industry for business matching during the exposition.

Tan Sri Dato' Sri Sallehuddin Mohamed
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ANTIBACTERIAL SOAP FROM EXTRACTION OF ZINGIBER ZERUMBET SP AND WASTE COOKING OIL

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Waste cooking oil (WCO) is creating a new crisis in urban areas. Most of the households have been discarding WCO into the sink which clogs the sink and in waterways it causes water pollution. In water, the waste cooking oil forms a layer covering the surface and prevents the dissolution of oxygen thereby increasing the chemical oxygen demand (COD) of water and causes it to be poisonous. Carcinogenic compounds will be absorbed by marine life and return to humans through the food chain. (Kulkarni and Dalai, 2006; Jafari, 2010; Marjadi and Dharaiya, 2010). Recently some efforts by a small company in Malaysia to collect waste cooking oil and used it for bio diesel. But the process of converting waste cooking oil into biodiesel is very expensive. Some companies collect waste cooking oil and filter it and then sell it as new unused cooking oil. Recycled cooking oil is harmful to the consumers. Many studies have been conducted and show the risk of diseases when using cooking oil that has been used and filtered and reused again. Another concern is triclosan (TCS). Triclosan is an agent of antibacterial and anti fungal properties. It is phenol poly chloro phenoxy. Triclosan is used as an antibacterial ingredient in personal care products such as toothpaste, deodorant and antibacterial soaps. Uses of triclosan based product inadvertently help bacteria to developed resistance to triclosan and other antimicrobial chemicals. Based on new study it has been linked to heart disease, heart failure and also can cause water pollution. Study shows exposure to triclosan interferes with thyroid hormone related gene expression in the frog, though at a lower level (triclosan exposure at 0.15 parts per billion is enough to interfere with hormone signalling system in frogs). (Aquatic Toxicology Volume 80, Issue 3, 1 December 2006, Pages 217-227). Therefore we need to find a replacement for triclosan to help our environment. Extracts from lempoyang is alternative for this material. Lempoyang (Zingiber Zerumber sp.) is a medicinal plant that has been used by the villagers. It is usually used for diarrhoea, fever and to increase our appetite. Lempoyang is in the same family as ginger and also commonly called wild ginger. It has beautiful flower and a height of about 30-50 cm from the ground. Just like any other genus of ginger rhizomes and multiply it by fraction of clumps. Some study also indicated that lempoyang have antibacterial material. This can be referred from the Asian Pacific Journal of Tropical Biomedicine (2011) 409-412, entitled 'Antimicrobial Activities of The Rhizome Extract of Zingiber Zerumbet sp'. Some scientist also claimed this material can be used as anti tumour promoter activity. (British Journal of Cancer (1999) 80 (1/2), 110-116. Therefore we suggested using waste cooking oil which have been filtered twice and added with Zingiber Zerumbet extract to make antibacterial soap. The base recipe for lempoyang soap is 1 litre of used cooking oil, 200 grams Natrium Hidroxyde, 400 grams warm water, 40 grams softener and 1 gram Zingiber Zerumber sp extract. Mix all ingredients until homogenous and stir for 15 minutes. Put the soap in a mould (container) and let it dry for two days. Wait for the soap to turn white and remove from the container and it is ready to be used. Experiments have been conducted on antimicrobial activities and show the result equivalent to antibacterial soap available in the market. From the result we suggested zingiber zerumbet sp extract as a replacement for triclosan as an antibacterial agent in soap. This product has potential to be sold in the world market as triclosan raises safety issue. We can reduce water pollution caused by waste cooking oil and introduce more environment friendly products.