

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

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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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RESEARCH INNOVATION BUSINESS UNIT
UiTM-MTDC Technopreneur Centre, Universiti Teknologi MARA
40450 Shah Alam, Selangor Darul Ehsan, MALAYSIA
Tel : +603-5544 2747/2748/2750
Fax : +603-5544 2790

Web : www.iiindex.com.my
Email : iiindexuitm@gmail.com



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
Pro-Chancellor, Universiti Teknologi MARA

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MODIFICATION OF STEROIDAL COMPOUNDS BY BIOTRANSFORMATION AS A GREEN SYNTHETIC TOOL

Mohd Zaimi Mohd Noor, Sadia Sultan, Anouar El Hassane, Syed Adnan Syed Ali Syah
Atta-Ur-Rahman Institute for Natural Product Discovery, UiTM Puncak Alam, Selangor.
Email: zaiminoor82@gmail.com

Bio transformation is considered one of the foundational pillars of green chemistry practice. Chemical modification through bio transformation are performed in mild condition, room temperature, in water based syntheses pot and can provide efficient alternative to chemical syntheses as the microbial transformation can reduce the use and generation of hazardous substances. Bio transformation is an important tool for compound modification of organic compound, especially natural product with complex structures like steroids. Micro organisms whole cell based bio transformation have been carried out by using steroidal compounds as the starting point and a range of fungi have been screened in this bio conversion activity. This research is focused on the structural modifications of steroids mediated by fungi, in order to investigate the effect of culture on substrate. This study investigated the effect of *Tri chothecium roseum* and SSW endophyte and it is carried out for the first time. Bio transformation of tibolone by fungal *Tri chothecium roseum* yielded five metabolites. The hydro xylations were mainly undergone in rings A, B and C, especially at C-3, C-6 and C-12 positions. The structural modification of an anti- inflammatory drug, prednisolone by marine endophytic fungus coded as SSW isolated from marine algae sea weed was reported for the first time. The bio transformation led to the formation of a known compound named 20 beta- hydroxy prednisolone. Transformation of 21 - acetyl prednisolone was done in parallel with prednisolone in order to see the effect of side chain of prednisolone in bio transformation. Endophytic fungus *Penicillium lapidosum* (SSW) also gave a positive result on de acetylation of 21 - acetyl prednisolone to prednisolone in two days fermentation and finally transformed to 20 beta- hydroxy prednisolone after six days fermentation. The absolute configuration of 20 beta- hydroxy prednisolone was also confirmed for the first time by both experimental and calculated chemical coupling constants and ECD spectra. Endo phytic fungus SSW was identified as a *Penicillium lapidosum* by sequencing against Blasting 2.2.10 of the U.S National Centre for Biological Information (NCBI).