PREFACE

In recent years, people have come to recognize that a healthy lifestyle can promote wellness and prevent illness and diseases, allowing them to enjoy long, high quality lives. People strive to maintain homeostasis and achieve their potential by meeting their individual physiological, safety, cultural and spiritual needs. The body's homeostatic balance is affected by diet. Consumption of massive amounts of sugar, salt, caffeine or fried foods can affect homeostatic balance.

Wellness is a state of health in which basic needs are being met and homeostasis maintained. Health problem can be any actual or potential concern or condition which must be resolved and prevented in order to maintain wellness. Unresolved problems will lead to the inability to meet basic needs and maintain homeostasis, eventually resulting in illness. Wellness technology can create healthy energetic environments that can optimize dynamic human system homeostasis targeting physical, mental, emotional and spiritual balances.

In an organization, wellness programs can be incorporated to improve the health and well-being of employees (and their families), in order to enhance organizational performance and reduce cost. Wellness programs typically address specific behaviours and health risk factors, such as poor nutrition, hypertension, coronary heart disease, obesity and smoking. These factors commonly lead to serious and expensive health problems and have negative impact on workplace productivity. While the return on investment (ROI) varies for each employer, studies in the United States have shown that for every USD1 an employer spends on wellness programs, employers can expect a USD3 to USD6 return on their investment. Wellness programs not only improve an individual's short-term and long-term health, but they also help curb absenteeism, improve productivity, and aid quicker return to work for employees on disability leave.

ABSTRACTS FOR POSTER PRESENTATION

PS2-11

Production Of Erythromycin Antibiotic By *Saccharoplyspora Erythraea* Fermentation In Shake Flasks And Bioreactor

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Abstract
Recently success of erythromycin in antibiotic market over the other antibiotics was due to that erythromycin has high quality and it is cheap in price. Erythromycin received much attention because of the increasing applications of its semi-synthetic modified derivatives to infection diseases, such as azithromycin, roxithromycin and clarithromycin. It is produced by the strain *Saccharoplyspora erythraea* (formerly known as *Streptomyces erythraea*). In this research, the aims were to optimize medium components for high erythromycin antibiotic production by the strain *S. erythae* via submerged fermentation using statistical technique known as response surface methodology. Glucose and yeast extract were found to have significant effect to erythromycin production using Placket-Burman experimental design for media screening. The Box-Benkhen experimental design was adopted for optimization studied. Finally, the optimal concentration of glucose, yeast extract, sodium nitrate, dipotasium hydrogen phosphate, sodium chloride and magnesium sulphate obtained using statistical media optimization is approximately 45;8; 4; 2.5;1.0; 0.5 (g L^{-1}), respectively. Result showed that the maximal erythromycin concentration and CDW obtained in shake flasks of optimize medium were 412.5 mg L^{-1} and 4.9 g L^{-1}, respectively. Production of erythromycin antibiotic reached 30.43% under the optimize medium. Furthermore, the batch culture using new medium formulation for erythromycin production was implemented using controlled and un-controlled pH conditions. Compared with the un-controlled pH bioreactor, the controlled bioreactor was increased erythromycin concentration by 12.9 % up to 567.5 mg L^{-1}. This present work demonstrated that great potential production of erythromycin antibiotic at industrial scale.

Keywords: *S. erythae*, Erythromycin, Medium optimization, Response surface methodology.

PS2-12

Probiotication Of *Punica Granatum* (Pomegranate) Juice By *Lactobacillus Plantarum*

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Abstract
Fruit juice enriched with probiotics is increasingly accepted nowadays, mainly due to its health benefit for digestive system. In particular, probioticated fruit juice is the good choice for those who are having lactose intolerant problem from milk based drinks. In the present study, the whole fruit of *Punica granatum* (pomegranate) has been probioticated with *Lactobacillus plantarum* at different fermentation temperatures (22ºC, 30ºC and 35ºC). The growth rate of L. plantarum has been monitored based on the optical density and acidity of the broth culture at 24 hours of time interval for 72 hours. The bacterial growth in the pomegranate juice was predicted by measuring absorbance at 600 nm spectrophotometrically and pH value by a pH meter. There was an increasing trend in the bacterial growth of *L. plantarum*incubated at 35ºC compared to other temperatures at 22ºC and 30ºC. The results also indicated there was no significant changes on pH during the fermentation as the bacterial strain was in adaptation process with the new medium and conditions. Meanwhile, the antioxidant assay showed that probiotication of pomegranate juice by *L. plantarum* significantly increased the radical scavenging activity. The pomegranate juice was shown to be a suitable substrate for *L. plantarum* cultivation at 35ºC.

Keywords : Pomegranate juice; fermentation; *Lactobacillus plantarum*, antioxidant activity.