ABSTRACT FOR PARALLEL SESSIONS

S1-H03

Efficient Utilization of Plant Materials for Profitable Manufacturing of the Wellness Industry

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Abstract
Phytochemical compounds are the active ingredients for the wellness industries that are mostly produced from the leaves, flowers, seeds, stems, barks and roots of plant materials through solid-liquid extraction in the upstream section of the industry. The type of solid-liquid extractor and its operation has a crucial influence on the overall performance of the process, and consequently, on the profitability of the whole wellness industry. Many process variables such as solvent type, particle size, solid-liquid ratio, degree of agitation, time and temperature influence the rate of solid-liquid extraction of phytochemical compound (s). The maximum production of the amount of phytochemical compound (s) of interest can be achieved through proper utilization of raw material by clear understanding of the effects of process variables, manipulating and controlling these independent variables during operations. This study has developed a new methodology called extraction selectivity in addition to extraction yield for characterizing the performance of the extraction process. It demonstrates the effective utilization of leaves' plant material of *Andrographis paniculata* for the solid-liquid extraction of andrographolide water extracts and other water soluble phytochemical compounds for the wellness industry. The analysis gives more insights into design, scale-up of solid-liquid extractor, operation planning, and suggests a new way of looking into operation and process optimization.

Keywords: Active ingredients, Raw materials, Process variables, Performance of solid-liquid extraction, Profitability of the wellness industry, Andrographolide water extracts.

ABSTRACT FOR PARALLEL SESSIONS

S2-C03

Optimization Of Polysaccharide Production By *Lactobacillus Kefiranofaciens* Using Response Surface Methodology

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Abstract
Kefiran is an exopolysaccharides produced by *Lactobacillus kefiranofaciens* which was isolated from kefir grains. Kefiran has wide applications mainly in food and pharmaceutical industries. Growth and kefiran production of *L. kefiranofaciens* can be significantly enhanced by using mixed culture technique. *Saccharomyces cerevisiae* in this study was used to enhance the kefiran production by reducing lactic acid accumulation in the cultivation medium. The statistical analysis was used for optimization study by using response surface methodology based on Box-Behnken design. The interaction was studied between three different levels of variables that were lactose, yeast extract and phosphate. A second order polynomial model was used to correlate the factors. The model was found to be significant. The optimum concentration of lactose, yeast extract and phosphate obtained using statistical media optimization is 59.09 g L^{-1}, 8.69 g $L^{-1}$and 0.5 g L^{-1} respectively. Kefiran production in optimized medium was 0.97 g L^{-1} which gave an increase in kefiran production up to 42.65 % compared to the un-optimized medium which was only 0.68 g L^{-1} of kefiran.

Keywords: Kefiran, exopolysaccharides, medium optimization, *Lactobacillus kefiranofaciens, Saccharomyces cerevisiae.*