OMICS International
conferenceseries.com

J Biotechnol Biomater 2015, 5:6
http://dx.doi.org/10.4172/2155-952X.C1.044

6th World Congress on
Biotechnology
October 05-07, 2015 New Delhi, India

Downstream processing of phytase from *Bacillus* MCCB 242 employing aqueous two phase extraction

Sareen Sarah John, Ramya R Nair and **I S Bright Singh**
Cochin University of Science and Technology, India

Partitioning in aqueous two-phase systems (ATPS) is a powerful versatile downstream process and has great potential for large scale continuous separation of proteins and removal of contaminants from fermentation broths, since they produce an initial purification at a fast pace. Over the years, phytase has received tremendous importance making it the most preferred feed additive mainly for the reason that it is eco-friendly. To satisfy the need for efficient, easier, scalable and economically feasible downstream process for phytase production, aqueous two phase system (liquid-liquid extraction method) was adopted in this study. The purification of *Bacillus* MCCB 242 phytase using salt precipitation and ion-exchange chromatography has been studied and compared with aqueous two-phase system. An efficient recovery approach of aqueous two-phase systems (ATPS) with polyethylene glycol (PEG) and sodium citrate system was developed for phytase extraction which resulted in one sided phytase partitioning with a purification factor of 5.88. When compared with multi-step and single-step procedure, a phytase recovery of 78.5% within a short span (2 hours) was attained by ATPS whereas only 62% recovery could be obtained in 96 hours by chromatography. The purified phytase from ATPS was analyzed by SDS PAGE and a single band corresponding to molecular mass of 43 kDa was observed. Accordingly, ATPS was found to be an effective alternative for simultaneous partitioning and purification of phytase, hitherto not reported for recovery and purification of *Bacillus* phytase. In this context, outcome of the study is promising in developing an efficient industrial bio-process for phytase production.

Biography

Sareen Sarah John has completed her MSc in Microbiology from Mahatma Gandhi University, Kerala and MPhil in Food & Industrial Microbiology from Annamalai University. She has submitted her PhD thesis entitled "Bioprocess optimization and characterization of phytase from an environmental isolate *Bacillus* MCCB 242" to Cochin University of Science & Technology, Kerala during December 2014. With 9 years experience in Microbiology/Biotechnology Research and Teaching, she has successfully completed 2 DST projects and has 2 journal publications, 13 abstract publications and won several national awards in paper/ presentations. Apart from her specialized interest in enzyme production, she is also interested in Genomics, Proteomics & Computational Biology.

sareensj@yahoo.co.in

Modeling and docking studies of DKK-1, a novel receptor in HCC pathway

Sandhya Hora Wadhawan and **Deepshikha Pande Katare**
Amity University, India

Hepatocellular carcinoma (HCC) is the fifth malignant tumor and the second leading cause of cancer related mortality worldwide. The major reason for high prevalence of HCC is poor diagnosis at early stage. Prognostic biomarkers of HCC are still not absolutely ready for introduction into clinical trials because they have restricted sensitivity and specificity. Serum Dickkopf-1 (DKK1) plays an important role in HCC progression which is a secretory protein in Wnt/β-catenin signaling pathway. The sensitivity and specificity of DKK1 are good to diagnose HCC. The 3-D structure of DKK1 was modeled and used for docking against various compounds extracted from marine organisms. These compounds have anti-cancerous activities and some of them are already in clinical trials. The compound with best binding energies will be taken forward to design inhibitors of DKK1.

Biography

Sandhya Hora Wadhawan is a PhD Scholar in Centre for Medical Biotechnology, Amity Institute of Biotechnology, Amity University and has completed her Master's in Biotechnology from Chaudhary Charan Singh University, Meerut. She has worked as a Research Assistant in SRMS-Institute of Medical Sciences, Bareilly for two years and published 3 papers in reputed national journals.

sandhya.hora@gmail.com