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Invited Speaker

Production, optimization and purification of xylanase by *Brevibacillusborstelensis* – MTCC 9874 isolated from soil sample of eastern Nepal

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Abstract: *Brevibacillusborstelensis*-MTCC 9874, screened from 202 microorganisms,was isolated by primary and secondary screening methods for xylanolytic activity (XA) from seven different places of Kavre and Morang districts of Nepal. In sub-merged fermentation (SmF), the microorganism was grown for 48 hours in five different mediums and minimal salt-yeast extract nutrient medium with xylan (1%w/v) was selected as a medium for further study where as it was grown for 96 hours in five different mineral salt solutions (MMS) with rice husk and MSS-1 was selected as a medium for further study in solid state fermentation (SSF) based on XA measured using DNS method. Optimum temperature and pH on XA were 60°C(XA = 6.58±1.1 IU/ml) and 7.6 (XA = 6.81±2.32 IU/ml) respectively. Thermal stability study showed that the enzyme has a good stability at 40°C (91.12%). In SmF, Plackett Burman design (PBD) (Minitab 15.1) was used with seven variables viz. xylan, yeast extract (YE), $(NH_4)_2SO4$, NaCl, $MgSO_4$, $CaC0_3$and trace element solution (pH 8). The result showed that YE and xylan were significant factors for xylanase production (> 95% confidence levels) where as PBD with six variables viz. K_2HPO_4, rice husk, NaCl, $MgSO_4$, $NaCO_3$ and $CaCl_2$ was carried out in SSF and the result showed that $K_2HPO_4$and rice husk were significant factors for xylanase production (> 95% confidence levels). Centre composite design was used to optimize the two significant factors and response surface and contour plot were used to locate the optimal value of the two factors in both fermentations. There was 797.54 times increase in xylanolytic activity after enzyme purification through Ammonium sulphate precipitation followed by Sephadex G-100 column (50×2.6 cm) saturated with phosphate buffer pH 6.8.Lineweaver – Burk plot showed that the enzyme has V_{max} and K_m values 0.1075 µg/mL.min and 1427.63 µg/mL respectively.

Biography : Dr. Budhathoki did PhD in pharmacy in Kathmandu University in 2010. Dr Budhathok is in the Department of Pharmacy, Kathmandu University, as a faculty since 07 September 2000 till date. Currently Dr Budhathoki is working as an Assistant Professor in the Department. Dr Budhathoki worked as a coordinator of the Department and run the Department from 2006 to 2012. Moreover, he worked as casual academic only level 2 (CAO 2) in University of Tasmania (UTAS), Hobart,, Tasmania, Australia from November 2013 to September 2014. Dr Budhathoki has a lot of professional contribution. He had worked as an elected President of Nepal Pharmaceutical Association (NPA), a National Professional organization of Pharmacistsfrom 2010 to 2014, Dr Budhathoki worked as a member of Nepal Pharmacy Council, agovernmental regulatory body of Pharmacy in Nepal from 2010 to 2014.

Dr Budhathoki did Post Doctoral Fellowship in Institute of Pharmacy and Molecular Biotechnology, University of Heidelberg, Germany in 2014. He was chairperson in international symposium that was held in Kathmandu University in 2007. He received several awards, such as, Nepal Bidhya Bhusan "Ka" from President of Nepal in 2069 B. S., National Education Award from "Ministry of Education of Nepal (2065 B.S.), Travelship Award from FIP to present at AAPS Annual Meeting and Exposition at Lousiana, New Orleans, USA. He has organized several Training and seminars in the university and several parts of Nepal. Dr. Budhathoki is the First recipient of Mike How Award from FIP in 2007. Dr Budhathoki co-authored a book "Introductory Pharmaceutics" and published more than 15 original research paper cum conference papers. Dr, Budhathoki received first research grant from international Foundation for Science(IFS), Sweden in 2009 (Ref No. F/4807-1). Dr Budhathoki is IFS research Grantee second time this year 2018 (Ref No. F/4807-2).