عنوان مقاله:

Recycling of sewage sludge as production medium for cellulase by a Bacillus megaterium strain

محل انتشار:

مجله بین المللی بازیافت مواد آلی در کشاورزی, دوره 4, شماره 2 (سال: 1394)

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خلاصه مقاله:

Background Cellulase is one of the enzymes commonlyused in several agricultural, industrial and sewage sludgetreatment processes. The present study aimed to investigatethe potential use sludge generated from sewage treatmentplants as a production medium for cellulase by B. megateriumstrain that was isolated from a sewage treatmentplant. The production of cellulase in the sludge mediumwas compared to different cellulosic materials: cotton, filterpaper, bagasse and sawdust as well as to galactose,fructose, lactose, maltose, mannitol, mannose, ribose, sucroseand xylose. The production of cellulase was conductedat optimum conditions (0.4 mL of the bacterialinoculum, 45 C, 72 h, pH 6.5 and citrate phosphatebuffer) that were determined in this study.Results The sludge medium has induced the cellulaseproduction by B. megaterium strain compared to cotton,filter paper, bagasse and sawdust. However, B. megateriumproduced high cellulase in the presence of carbohydratecompounds as carbon source. More cellulase was producedin the sludge medium containing low concentrations ofNi2?, Zn2? and Cu2? ions.Discussion The ability of B. megaterium strain to producecellulase in the sewage sludge medium was due tothat the strain has acclimatized to resist heavy metals andproduce the enzyme genetically. Moreover, B. megateriumhas an important environmental role for reuse of sewagesludge as production medium for cellulase that could beused in many of applications, including production ofanimal feed, formulation of detergents, juice clarification,paper industry .and wine production

کلمات کلیدی:

Cellulase Bacillus megaterium Sludge Heavy metals Recycle