عنوان مقاله:

Identification of Alkaline Protease Producing Bacilli from Sludge of Bactofuge and Separator Using Culture–Based and Molecular Techniques

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خلاصه مقاله:

Dairy factories produce high volume of sludge from bactofuge and separator. Meantime, global demand for the proteases is increasing. Recently, utilization and conversion of the waste materials into value added product is a sustainable process. The objective of this study was to investigate the potential of bactofuge and separator sludge to produce alkaline protease enzymes. Total viable aerobic and anaerobic counts were determined on Plate Count Agar at ۳۷ and ۵۰ºC for both types of sludge. Lactobacillus count in MRS Agar plates corresponded to ۳.۱۲±۰.۲۵ log CFU mL-۱ for sludge of bactofuge and ۳.۰۸۵±۰.۲ log CFU mL-۱ for sludge of separator. Mold and yeast had population levels of ۲.۳±۰.۱ log CFU mL-۱ for bactofuge and ۲.۰۸±۰.۱ log CFU mL-۱ for separator. Proteolytic bacteria were isolated from dairy sludge using Skim Milk Agar media. A clear zone of Skim Milk hydrolysis indicated protease-producing organisms. Different cultural parameters (temperature, pH, thermal shock, and kind of sludge) were optimized for maximal enzyme production. Maximum proteolytic activity was observed at ۳۷oC (P< ۰.۰۵). Isolated alkaline protease producing Bacilli were identified by Polymerase Chain Reaction (PCR). The species were identified as Bacillus cereus strain zk۲, Bacillus sp. cp-h۷۱, Bacillus thuringiensis strain ILBB۲۲۴, and Bacillus sp. Bac۶D۲.

کلمات کلیدی:

Bacillus, Dairy sludge, Polymerase Chain Reaction, Proteolytic activity, لجن.

لبنی, باکتوفیوژ, سپراتور, فسفاتاز قلیایی, باسیلوس