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## Biotechnology 2020: Isolation and screening of protease producing bacteria from soil and characterization of enzyme- Farheen Aslam- Lahore College for Women University

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Proteins are biocatalysts created by living cell, as a rule partake in the metabolic procedure of the cell and accelerate the biochemical response (Suganthi *et al.*, 2013). Utilization of chemicals in mechanical and food forms have encountered huge advancements in various territories in the last 10-20 years. These incorporate cleanser, material, grain wet processing, mash and paper, food, monogastric creature feed, natural compound union, characteristic polymer changes and indicative and so forth.

Proteases additionally assume significant job in silk degumming and last rich surface completing in material industry (Srilakshmi et al., 2015). Soluble protease from Bacillus subtilis have been accounted for the handling of waste plumes from poultry abattoir (Jisha et al., 2013). A mix of proteases from Bacillus subtilis, Bacillus amyloliquefacines and Streptomyces species with thioglycolate is utilized financially to clean obstructed with hair containing deposits (Rani et al., 2012). Soil examples were required to be collected. For screening of protease delivering microorganism's skim milk agar medium was used (Hamza and Azmach. 2018). Isolated culture with a conspicuous zone of freedom was distinguished dependent on both the physiological and morphological attributes. 1% inoculum of microbes was included 10 ml of LB stock media and broods at shaking condition at 37°C for 24 hour. Rotator it at 6000 rpm, expel the bed. Presently check the OD at 660 nm.

Proteases are a gathering of catalysts, whose reactant work is to hydrolyze peptide obligations of proteins and separate them into polypeptides or free amino acids. They establish 59% of the worldwide market of modern compounds, which is relied upon to surpass \$ 2.9 Billion by 2012 (Deng *et al.*, 2010). They have wide scope of business use in cleansers, calfskin, food and pharmaceutical ventures (Bhaskar *et al.*, 2007 and Jellouli *et al.*, 2009). Wellsprings of proteases incorporate a wide range of life, that is, plants, creatures and microorganisms. In view of their corrosive base conduct, proteases are ordered in to three gatherings, that is, corrosive, nonpartisan and soluble proteases. Corrosive proteases performed best at pH scope of two .0-5.0 and are for the most part delivered by growths. Proteases having pH optima inside the scope of seven .0 or around are called nonpartisan proteases.

Microorganisms excrete a good sort of proteolytic enzymes, which also are found in mammalian systems. They molecules of relatively small size and are compact, spherical structures that catalyze the peptide linkage cleavage in proteins (Polgar, 1989). They hydrolyze peptide bonds and thus, cause the disassembly of proteins. Commercially they're vital as quite 60% of the entire enzyme market relies on proteases, isolated from plants, animals, bacteria necessary for living organisms; they're ubiquitous, found during a wide diversity of sources. Proteases from microbial sources are preferred over the enzymes from plant or animal sources since they possess most the characteristics desired for his or her biotechnological applications. Microbial proteases represent an honest source of enzymes thanks to variety of characteristics like their broad biochemical diversity, their rapid climb, the limited space required for cell cultivation and therefore the ease with which the enzymes are often genetically manipulated to get new enzymes for various applications (Rao *et al.*, 1998).

Although a good range of microorganisms are known so far to supply proteases, an outsized proportion of the commercially available alkaline proteases are derived from Bacillus strains due to its ability to secrete large amounts of alkaline proteases having significant proteolytic activity and stability at considerably high pH and temperatures (Yang *et al.*, 2000). Proteases (depending on their activity at different pH) could also be acidic, neutral or alkaline protease. Alkaline proteases useful for detergent applications were mostly active within the pH range 8-12 and at temperatures between 50 and 70°C (Al-Shehri *et al.*, 2004). Proteases of the subtilisin group are utilized in the treatment of burns and wounds. Oral administration of proteases produces an anti-inflammatory response in burns patients and accelerates the method of healing (Thangam *et al.*, 2002).

Although a spread of proteolytic fungi and bacteria are known, few provide high activities with commercial success. The most industrial application for alkaliphilic proteases is within the detergent industry (Gupta *et al.*, 1999, 2002), leather tanning process (Hameed *et al.*, 1996), food industries (Kaliz, 1988) and silver removal from X- ray films (Fujiwara *et al.*, 1991). For an enzyme to be used as a detergent additive it should be stable and active within the presence of typical detergent ingredients, like surfactants, builders, bleaching agents, bleach activators, fillers, fabric softeners and various other formulation aids (Anwar and Saleemuddin, 2000). One of the most drawbacks affecting the stableness at alkaline pH of enzymes recovered from thermophiles is that enzymes from alkalophiles confer stability during a good pH range but are usually thermo labile.

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Thus it's desirable to look for brand spanking new proteases with novel properties from as many various sources as possible. This study reports the screening of soil bacteria for his or her capability of alkaline protease production and characterization of the Proteases are among the most important hydrolytic enzymes that found in every organism to undertake important physiological functions. They are multipurpose enzymes utilized in various industries like detergent, silver recovery, food, pharmaceutical, leather, and textile industries. This work aimed to produce protease from indigenous microbes for use as detergent additive. Isolation of protease producer was undertaken using kimmed milk agar medium. Crude enzyme was characterized in terms of wash and stain removal tests. Image Proteases from microbial sources are preferred over the enzymes from plant or animal sources since they possess most the characteristics desired for his or her biotechnological applications. Microbial proteases represent an honest source of enzymes thanks to variety of characteristics like their broad biochemical diversity, their rapid climb, the limited space required for cell cultivation and the ease with which the enzymes can be genetically manipulated to generate new enzymes for various applications (Rao *et al.*, 1998). Although a wide range of microorganisms are known to date to produce proteases, a large proportion of the commercially available alkaline proteases are derived from Bacillus strains because of its ability to secrete large amounts of alkaline proteases having significant proteolytic activity and stability at considerably high pH and temperatures.