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EVALUATION OF ANTIMICROBIAL SUBSTANCES PRODUCTION FROM *BACILLUS* STRAINS ISOLATED FROM SOIL

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Bacillus strains have ability to produce various antimicrobial agents such as peptides, lipopeptides, phospholipids which have activity towards a broad spectrum of microorganisms including pathogens and fungi. Therefore they have potential application in food industry for the inhibition of pathogens. In this study, a total of 13 *Bacillus* strains isolated from soil and potato samples were screened for antimicrobial substance production. The bacterium producing the highest amount of antimicrobial substance was selected for further optimization studies. Growth medium was enriched with whey which contains lactose, protein and various minerals. 10%, 15%, 20% of whey was used in order to determine the effect of whey on the antimicrobial activity. In addition, optimum temperature and pH for the antimicrobial production have been determined. Growth was carried out on a shaking incubator at 35 °C for 72 h. Subsequently, it was centrifuged at 10000 rpm for 10 min to remove the cells. Antimicrobial activity was measured using disc diffusion method in which a filter paper disc with 6 mm diameter was saturated with cell free supernatant and placed on petri dishes inoculated with pathogen microorganisms. Pathogenic bacteria including *Salmonella typhimurium*, *Listeria monocytogenes*, *Staphylococcus aureus*, *Esherichia coli* were used to determine antibacterial activity. Antimicrobial substances from *Bacillus* sp ZBP4 and *Bacillus* sp. BAST2 were effective against *S. typhimurium*, *L. monocytogenes* and *E. coli*. Antimicrobial substances from *Bacillus* ZBP10 inhibited the growth of *S. aureus* and *L. monocytogenes*.

Keywords: *Bacillus*, whey, antimicrobial substance

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