

C626274 : MAJOR INDUSTRIAL MICROBIOLOGY

KEY WORD: :ANTIMICROBIAL SUBSTANCE / Streptococcus spp.

NUTTAPORN UTHAIRAT : ISOLATION OF STREPTOCOCCUS STRAINS PRODUCING
ANTIMICROBIAL SUBSTANCE FROM RAW MILK. THESIS ADVISOR : ASSIST.
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Thirty eight of Streptococcus spp. strains producing antimicrobial substances, isolated from raw cow milk of four dairy farms, were tentatively identified as Streptococcus uberis 15 strains, Streptococcus sorbrinus 13 strains, Streptococcus lactis 6 strains and Streptococcus agalactiae 4 strains. Inhibition test on the growth of 7 tested microorganisms of Bacillus cereus, Escherichia coli, Listeria monocytogenes, Pseudomonas aeruginosa, Salmonella typhi, Salmonella typhimurium and Staphylococcus aureus were performed and found that every culture broth of Streptococcus spp. (pH 5.0 - 5.5) could only retard S. aureus growth on agar well diffusion test. Based on inhibition zone width on agar media and curd formation, three strains of isolated St. spp. including St. sp. strain TD 1, St. sp. strain TD 3 and St. sp. strain NO 2 were selected for subsequent experiment on the inhibition Tube test. Each of the culture broth, pH adjusted to 6.5, showed inhibitory effect on all 7 tested microorganisms but the better results detected were from St. sp. strain TD 1 and St. sp. strain TD 3. When comparing the doubling time of their growth St. sp. strain TD 1 grew a little faster than St. sp. strain TD 3.

Partial purification of antimicrobial substances from the culture broth of St. sp. strain TD 1 was performed and found that precipitation with $(\text{NH}_4)_2\text{SO}_4$ at the concentration of 70-80% (w/v) could mostly retard the growth of tested microorganisms. After following through chromatography procedure of CM - Cellulose column and Sephadex G - 50, both filtrate of 9 - 12th fraction and 62 - 64th fraction could retard the growth of tested microorganisms. Whereas this antimicrobial substance could not be purified by Sephadex G - 50. However, after following the procedure of sodium dodecyl sulfate polyacrylamide gel electrophoresis this antimicrobial substance was tentatively identified as a lipoprotein with a MW. of about 1,100 dalton.

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