



Antibacterial activity of plant extracts on dairy contaminants

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Abstract : Dairy products rich in nutrients harbours antibiotic-resistant pathogenic bacteria that are potential threat for human health. Medicinal plants, regarded as traditional medicine has great potential to be developed as new and safe antimicrobial agents. Present study aims to isolate bacteria from dairy products and evaluate antibacterial effect of plant extracts of *Tagetes* species and *Citrus sinensis*. A total of 17 morphologically different bacteria were isolated from 4 different dairy samples. Based on cultural, morphological, growth on selective media and biochemical properties, bacterial isolate 1 was found to be *Escherichia* species, isolate 2 as *Klebsiella* species, while isolate 3 as *Staphylococcus* species. Antibiotic susceptibility test of these three isolates was done by Kirby-Bauer disc diffusion method using six antibiotics viz., ofloxacin,

ciprofloxacin, *cephalexin*, *moxifloxacin*, *norfloxacin* and *levofloxacin*. All the three test isolates were found to be resistant to all studied antibiotics. Thereafter antibacterial effect of plant extract of *Tagetes* and *Citrus* was performed using agar well diffusion method. The result indicated that most of the extracts exhibited antimicrobial properties of which citrus peel extract was the only one that had antibacterial activity against isolate 1 (*Escherichia* spp.). The highest potential was observed in the extract of *Citrus* peels against all three test isolates, followed by *Tagetes* flower extract effective against isolate 2 (*Klebsiella* spp.) and isolate 3 (*Staphylococcus* spp.). *Tagetes* leaf and orange pulp was effective only against isolate 3. The study signifies the antibacterial potential of extracts of *Tagetes* and *Citrus* against pathogenic bacteria.

Keywords:- Dairy products, *Tagetes*, *Citrus*, Antibiotic, Antibiotic Resistant Bacteria.

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Introduction:

Consumption of dairy and milk products has been an important part of balanced and healthy diet. It provides necessary nutrients like, protein, vitamins, minerals, fats, sugar, etc., required for proper growth, development and sustenance of healthy life (Belitz et al., 2008). Owing to its high nutritive content it provides favourable environment for the growth of microbes (Fusco et al., 2020). Dairy contaminants are those microbes that enters raw milk, when it comes in contact to milker,