Inhibitory effects of Probiotic on growth and adhesion of some gram negative pathogenic bacteria

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Abstract:
This work focused on three important human pathogens; Escherichia coli, Salmonella typhi and Klebsiella pneumonae. Results showed that there is several virulence factors in this bacteria such as capsule, enzymes, motility and fimbriae. Escherichia coli included fimbriae type I, II and III . Salmonella typhi contained only type II and III. While Klebsiella pneumonae included type I and III. Probiotic preparations from Lactobacillus acidophilus appeared to affect the bacterial growth and adhesion. Bacterial growth was inhibited by using stock lactic acid bacteria filtrate and 50:50 diluted filtrate. Higher inhibition zones were recorded during the use of stock filtrate of the probiotic on the pathogenic bacterial isolates. Bacterial adhesion to epithelial cells was inhibited also by using the probiotic. In the case of Escherichia coli, the adhesion was reduced from 59-61 to 24-21 and 33-30 bacterium/cell by using the stock and diluted probiotic respectively. In the case of Salmonella typhi reduction of bacterial adherence was also observed from 55-53 to 11-13 and 16-14 bacterium/cell by using the stock and diluted probiotic respectively. While in the case of Klebsiella pneumonae from 44-46 to 8-9 and 14-10 bacterium/cell by using the stock and diluted probiotic respectively. This results explained that the bacterial adhesion is a crucial step in the colonization and pathogenesis of bacteria, which can be inhibited by using probiotic preparations.