**The antimicrobial effect of Lavandula essential oil and two probiotic bacteria *Lactobacillus casei* and *Sacharomyces bulardii* on food poisoning bacteria and investigating their synergistic effect**

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**‌ Statement of Problem:** Recent years, there has been an increased interest in the use of natural antimicrobial agents. The effective compounds in plant extracts cause their therapeutic properties. Lavandula is one of the native plants of Iran.

**Research Purpose**: The effect of Lavandula essential oil on the formation of bacterial biofilm was also measured, and the synergism effect of two probiotic bacteria*, Lactobacillus casei* and *Sacharomyces boulardi,* was investigated with this extract among other things.

**Research Method:** Lavandula essential oil was prepared with a clevenger. Antimicrobial activity was investigated by disc diffusion and well plate methods. The minimum bacterial inhibitory concentration (MIC) and the minimum bactericidal concentration (MBC) were determined by microdilution method.

**Results and Conclusion:** The results showed that Lavandula extract created zone of inhibiotion of 25, 18 and 20 mm and MIC of 6.25, 3.12 and 3.12 on *Staphylococcus aureus 25923 ATCC, Pseudomonas aeruginosa 27853 ATCC and Escherichia coli 15223 ATC* and each two probiotics also had an antimicrobial effect on bacteria. The synergism effect on *Staphylococcus aureus* was significant. As a result, the effect of this essential oil on Gram positive bacteria was more and a significant synergistic effect was observed with probiotics, which can be compared with more studies should be considered in treatments.

**Keywords:** Lavandula essential oil,Antibacterial activity, probiotic, MIC