Antimicrobial effects of five Thyme-like species against four food-borne bacteria

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Background and Aims: The present study was designed to evaluate the antibacterial effects of Hydro-alcoholic extracts of Thymus vulgaris L., Thymus caramanicus Jalas., Zataria multiflora Boiss., Ziziphora clinopodioides Lam. and Ziziphora tenuior L. against four food-borne pathogens: Staphylococcus aureus (ATCC: 6538), Shigella dysenteriae (PTCC: 1188), Salmonella typhimurium (ATCC: 14028) and Escherichia coli (ATCC: 8739).

Methods: The extracting was performed by maceration method (ethanol:water [1:1] as Menstruum). Primarily evaluation of the antimicrobial effect was utilized by cup plate technique and then Minimum Inhibitory Concentration (MIC) was determined by Agar serial dilution method according to NCCL 2008.

Results: The results showed that T. caramanicus was the most effective extract with MIC values equal to 1.560, 3.125, 3.125 & 0.78mg/ml against S. aureus, S. dysenteriae, S. typhimurium and E. coli respectively. Z. clinopodioides and Z. tenuior had the minimum antimicrobial activity in comparison to other extract. There was no significant difference between the antimicrobial effect of these two plants against S. aureus and E. coli. But Z. tenuior was more effective against S. dysenteriae and S. typhimurium with MIC values equal to 6.250 and 25.000 respectively.

Conclusions: The antibacterial effect of the extracts of T. vulgaris, T. caramanicus and Z. multiflorais is due to their phenolic compounds present in these three species. These compounds also present in Z. clinopodioides and Z. tenuior, but in low concentration.

Keywords: Thymus; Ziziphora; Zataria; Antimicrobial