Quantitative study on antibacterial effect of Chamomile, Plantain and Nettle extracts upon Streptococci spp. comparison with commonly used antibiotics

hoda shahmari*,

Abstract Today, resistance to antibiotics among pathogenic bacteria is something that faced physician around the world with many problems. As much as people become aware of the dangerous side effects of synthetic antibiotics, the demand for natural alternatives to these drugs will increases. Plants have natural substances that lower the risk of complications and even have beneficial side effects. According to various reports about sensitive bacteria Streptococci spp, this study aimed to compare the antimicrobial effect of aqueous and organic extracts of nettle, plantain, chamomile and water mint on members of the genus Streptococci spp and comparing them with common antibiotics. Plant species used in this study were collected their natural habitat in the province of Guilan and after drying; their aqueous and ethanol extracts were prepared. The antimicrobial activity of the extracts was investigated by Disk Diffusion method. After three times per test, the average diameter of Non-Growth Haloes of extracts against Streptococci spp was measured and recorded. Then, the minimum inhibitory concentration was determined using micro-broth dilution. The antibacterial effects of aqueous and alcoholic extracts of the four plants chamomile, plantain, water mint and nettle against Streptococci spp was appropriate and expected. Non-Growth Haloes of alcoholic extracts of chamomile, plantain, water mint and nettle and combined extracts in concentrations of 200 mg/ml against the tested bacteria in Disk Diffusion method was measured 12,11,9,0,14 mm, respectively. In the case of micro-broth dilution, the above alcoholic extracts, in concentrations 0.39, 1.56, 0.78, 0.39, 0.78 mg ml had growth inhibitory effect against Streptococci spp. Also, Non-Growth Haloes of the aqueous extracts of the tested

plants at a concentration of 400 mg ml against Klebsiella by disk Diffusion method to extracts of chamomile, plantain, water mint, nettle and composition of the extract proved the order of 12, 0, 8, 10, 9 mm, respectively. And the Streptococci spp minimum inhibitory concentration by micro-dilution method for the above extract is in the concentration of 0.78, 12.5, 6.25, 1.56, 3.12 mg ml, respectively. Among this, the maximum and minimum diameters of Non-Growth Haloes by Disk Diffusion method are related to alcoholic chamomile and alcoholic and water plantain extracts. Also, the maximum and minimum growth inhibitory effect against Streptococci spp micro-broth dilution method is related to aqueous extract of chamomile and alcoholic extract of nettle and plantain. As a result, the inhibitory effect of alcoholic extract of chamomile on the growth of Streptococci spp is acceptable. And for clinical application of this extract, further clinical trials are necessary.

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