

In Vitro Antimicrobial Screening of Some Medicinal Plants Used in Traditional Turkish Mesir Paste

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Introduction: Humankind without scientific knowledge discovered new treatment methods through trial and error method in the history. Mesir paste, a traditional special mixture founded during Ottoman period, about 500 years ago as a medicine, which contains different types of spices and herbs, including *Crocus sativus* (saffron crocus), *Zingiber officinale* (Ginger), *Terminalia citrina* (black chuglam or citrine myrobalan), *Cuminum cyminum* (cumin), *Piper longum* (pippali), *Rheum rhabarbarum* (Rhubarb) and *Aquilaria agallocha* (oud or oodh). All ingredients of Mesir paste have been used for the treatment of various diseases in Turkish folk medicine for long centuries. In addition to this, especially the synergistic antimicrobial effect thought to be the reason of Mesir paste's healing effect. The aim of this study is to determine the *in vitro* antimicrobial activity of ethanol extract of *A. agallocha* roots, *R. rhabarbarum* roots and *P. longum* fruits.

Materials and Methods: Antimicrobial activity of ethanolic extracts were investigated against 17 bacterial and 1 fungal strain, namely, *Bacillus subtilis* DSMZ 1971, *Candida albicans* DSMZ 1386, *Enterobacter aerogenes* ATCC 13048, *Enterococcus durans*, *Enterococcus faecalis* ATCC 29212, *Enterococcus faecium*, *Escherichia coli* ATCC 25922, *Klebsiella pneumoniae*, *Listeria innocua*, *Listeria monocytogenes* ATCC 7644, *Pseudomonas aeruginosa* DSMZ 50071, *Pseudomonas fluorescense* P1, *Salmonella enteritidis* ATCC 13075, *Salmonella infantis*, *Salmonella kentucky*, *Salmonella typhimurium* SL 1344, *Staphylococcus aureus* ATCC 25923 and *Staphylococcus epidermidis* DSMZ 20044 by using the disk diffusion method.

Results: It is observed that ethanol extracts of *A. agallocha* roots, *R. rhabarbarum* roots and *P. longum* fruits have antimicrobial activity against several Gram positive and Gram negative microorganisms tested.

Conclusion: The results of our study clearly put forward that *A. agallocha* roots, *R. rhabarbarum* roots and *P. longum* fruits could have a possible medicinal uses.

Keywords: Antimicrobial activity, Mesir paste, *Piper longum*, *Rheum rhabarbarum*, *Aquilaria agallocha*.

Acknowledgement: The author acknowledges the help provided by Ali Yetgin during some practical experiments.

Diversity of lactic acid bacteria isolated from fermented garlic and red pepper used as ingredient in Sucuk

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Abstract: Sucuk is a traditionally fermented Turkish sausage, and it is widely produced and consumed in Turkey. Recently, it has been largely produced by using industrial method while occasionally produced by traditional method. Lactic acid bacteria are the bacteria group that is important in the fermentation of sausage/sucuk due to their positive effects on some properties such as flavor, texture, color and shelf life. This study aimed to see possibility of using fermented red pepper and garlic, in the sucuk production as a lactic acid bacteria source. First of all, red pepper and garlic were fermented for 10 days at 25°C and lyophilized by using a freeze-drier. Then, isolation of lactic acid bacteria were carried out in red pepper and garlic before and after the drying processes. While lactic acid bacteria count of fermented red pepper and garlic were determined as 7.55 and 6.89 log cfu/g respectively, before drying, it was 5.19 and 5.23 log cfu/g after the drying. A total 11 isolates were identified from the fermented red pepper and garlic samples. Seven isolates were *Lactobacillus plantarum* in the undried and dried fermented red pepper samples. However, *Lb. sakei* (1 isolate from undried garlic), *Weissella koreensis* (2 isolates from dried garlic) and *Leuconostoc mesenteroides* subsp. *mesenteroides* (1 isolates from dried garlic) were identified from the undried and dried garlic samples. In the results, the lactic acid bacteria such as *Lb. plantarum* and *Lb. sakei* important strains in the fermentation of Turkish sausage seemed to be natural flora of fermented red pepper and garlic. Therefore, it was concluded that the fermented red pepper and garlic can be used as lactic acid bacteria supplying ingredient in sucuk production.

Keywords: Fermented, red pepper, garlic, lactic acid bacteria, sucuk

Acknowledgements: This study was supported by Erciyes University, Scientific Research Projects Coordination Unit (FDK-2013-4676).