

# **Investigation of antimicrobial effects of *Lavandula angustifolia* and *Matricaria chamomilla* extracts and their anti-Alzheimer effects by inhibiting the production of amyloid nanobiofibrils**

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**Abstract Introduction:** Lavender and Matricaria are the most valuable natural sources that used in pharmaceutical, cosmetic and sanitary industries. In the present study, we investigated the antimicrobial effects and anti-Alzheimer's effects of these compounds by inhibiting the production of amyloid nanobiofibrils. **Methods and materials:** In the present study, the antimicrobial and anti-Alzheimer's effects of these compounds were investigated by inhibiting amyloid nanobiofibril production. We used hydroalcoholic way for extracting of plant. Antimicrobial effects of these extracts were determined by agar well diffusion, minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) on standard strains of *Staphylococcus aureus* (PTCC1330) and *Escherichia coli* (PTCC1122). Also, we used ultraviolet-visible spectrophotometry to study the inhibitory effect on the production of amyloid fibers. **Results:** According to the results of GC-Mass, the most important compounds in the *L. angustifolia* extract were Eucalyptol, Camphor and Borneol and the most important compounds of *M. chamomile* extract were Benzo[h]quinoline and Pentalane. MIC for *L. angustifolia* extract in both bacteria were 58mg/ml and *M. chamomile* extract for *S. aureus* and *E.coli* were 59mg/ml and 18mg/ml. MBC for *L. angustifolia* extract for *S. aureus* and *E.coli* were 16mg/ml and 232mg/ml, also for *M. chamomile* extract for both bacteria were 237mg/ml. In the agar well diffusion test, both extracts had inhibitory effect on *S. aureus* and just *M. chamomile* extract had inhibitory effect on *E.coli*. In a solution containing 12% *L. angustifolia* extract and in a solution containing 20% *M. chamomile* extract we had the maximum inhibitory effect

on the production of amyloid nanobiofibrils. **Discussion and Conclusion:** The results of this research showed that both of extracts had a weak inhibitory effect on *S. aureus* and *E.coli* and had an inhibitory effect on the production of amyloid nanobiofibrils. So, the anti-Alzheimer and antimicrobial effects of these extracts can be studied more. **Key words:** *Lavandula angustifolia*, *Matricaria chamomilla*, Amyloid nanobiofibrile, Antimicrobial, Anti-Alzheimer's

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