

Evaluation the effect of antibacterial activity artemisa extract immobilized on polymer substrate

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Introduction: Wormwood (*Artemisia*) is chicory family and has antibacterial, antiviral, antifungal, and antioxidant properties. Hydrogels, polymers, and water-loving copolymers have a three-dimensional network that is used to release water-loving and water-escaping drugs. **Method:** Wormwood extract antimicrobial properties were studied in a growth test and analyzed for extract components using GC-Mass test. After that, hydrogel was synthesized based on Chitosan. The effect of synthetic factors on hydrogel structure was studied using FT-IR, SEM, and TGA. Swelling and extract release rate of the hydrogel were measured, and then wormwood extract was loaded into the hydrogel to study its antimicrobial properties. **Results:** Wormwood extract growth test indicated antimicrobial properties against *Staphylococcus aureus* and *Escherichia coli* but did not affect *S. typhimurium*. Synthetic factors affected hydrogel structure and the optimum condition for synthesizing hydrogel is 1-2 g Chitosan and 0.1g Acrylamide and 0.1g Acrylic acid at 60-80 °C. As loading time increases, the amount of extract loaded in the hydrogel increases and then almost stops. Loaded extract in hydrogel has gradual release and showed growth and death control properties against *Staphylococcus aureus* and *Escherichia coli* and had no growth control against *S. typhimurium*. **Conclusion:** Loaded wormwood extract on hydrogel could be used as a new effective drug complex.

Keywords : wormwood plant, hydrogel, antibacterial

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