

Antimicrobial applications of substituted benzoylthiourea derivatives in wound dressing for bedsores

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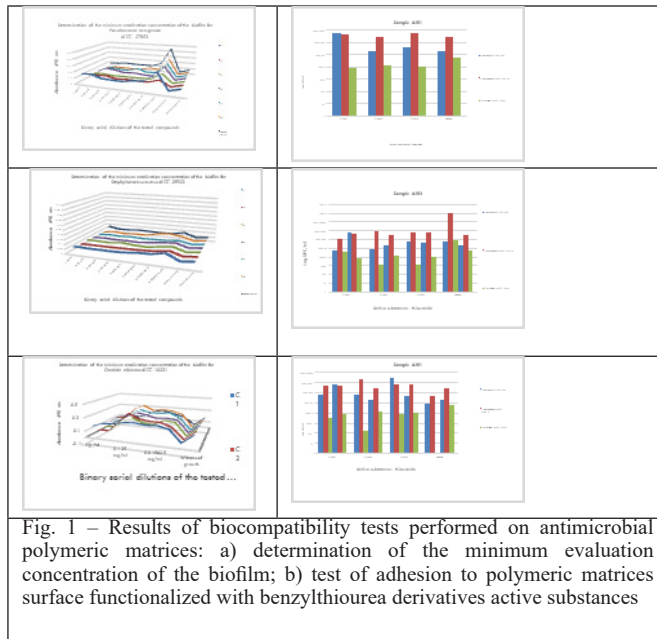
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Some diseases that require the patient to lie down for a long time are associated with the appearance of bedsores on large parts of the human body, due to the pressure subjection of different portions, especially the hips and buttocks. Damaged skin is exposed to microbial infections, which delays the healing process and increases suffering due to pain. Patients should apply bandages directly to the damaged skin to protect it from direct contact with clothing and to speed up the healing process. Numerous researches have been carried out to achieve high-performance wound dressings that improve the health of patients. Based on prior studies performed on thiourea derivatives antimicrobial properties [1], in this paper we present four wound dressing compositions based on medical grade water soluble polymers (poloxamer, β -cyclodextrine, polyvinylpyrrolidone, PVA) and additives, named AM1, AM2, AM3, AM4, loaded with new benzoylthiourea derivatives substituted with fluorine atoms named CTEp87, CTEp89, CTEp93, in order to increase the antimicrobial, antifungal and antiviral properties. Before clinical studies, we present some preclinical tests of wound dressing compositions that are mandatory, namely:

- qualitative determination of the antimicrobial effect of the compounds tested by the spot seeding technique,
- quantitative testing performed by the method of serial microdilutions in liquid medium,
- study of the influence of the tested compounds on the development of microbial biofilms on inert substrate,
- testing the adhesion capacity to the polymeric substrate functionalized with benzoylthiourea-derivatives active substances, using the method of determining the number of CFU/ml.

Microbial strains were selected according to the standard “SREN 14885 -Chemical disinfectants and antiseptics - Application of European Standards for chemical disinfectants and antiseptics”

The antimicrobial efficacy has been reported against *Staphylococcus aureus* ATCC 25923, *P. aeruginosa* ATTC27853, *Candida albicans* ATCC 10231 grown on PDA (potato dextrose agar) media.



Biography

Elena Grosu has her expertise in obtaining new polymeric composites with controlled properties, such as antibacterial and prolonged use; development of technologies regarding the compounding of thermoplastic polymers, with biocompatibility properties for disposable plastic medical devices; development of new polymeric composites with controlled release of active substances for medical applications; obtaining new polymeric materials with improved antioxidant properties; obtaining biodegradable polymeric composites for medical applications; analysis of the rheological properties of polymeric receptors by determining the melt flow index (MFI) and machinability on the Brabender plastograph; testing the thermal properties of polymeric materials by DSC, physical-mechanical properties (tensile strength, elongation at break, shock resistance Charpy and Izod, FTIR), morphological by SEM.