

RESIN ACIDS AS RAW MATERIAL FOR FABRICATION OF ANTIMICROBIAL MICRO- AND NANOPARTICLES OF DEHYDROABIETIC ACID LOADED WITH CYCLODEXTRIN AND CHROMENOL HYBRID

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Abstract. In this work methods to obtain complexes from β -cyclodextrin and dehydroabietic acid with chromenol-triazol hybrid with the sizes limits of approximately 0.1-250 μm are reported. Kneading, co-evaporation and co-precipitation as example of the resolution technology of racemic 2-tert-butyl-3-(1*H*-1,2,4-triazol-1-yl)-2*H*-chromen-2-ol for obtaining micro- and nanoparticles has been optimized. *In vitro* dissolution studies of the synthesized compounds in phosphate buffer (pH= 6.8) showed an improved dissolution rate of chromenol-triazol hybrid in the inclusion complexes compared to the free form. It has been found that β -cyclodextrin microparticulate systems loaded with dehydroabietic acid and chromenol-triazol hybrid are showed good antibacterial activity with MIC and MBC values ranging from 0.72 to 44.45 μM . The evaluation results revealed that all compounds showed good antifungal activity with MIC values ranging from 0.02 mM to 0.4 mM and MFC from 0.07 mM to 0.52 mM better than reference drugs ketoconazole (MIC and MFC values at 0.28-1.88 mM and 0.38 mM to 2.82 mM respectively), bifonazole (MIC and MFC values at 0.32-0.64 mM and 0.64-0.81 mM) and nistatin (MIC and MFC values at 0.55-0.65 mM and 0.65-0.79 mM).

Keywords: β -cyclodextrin, dehydroabietic acid, 2-tert-butyl-3-(1*H*-1,2,4-triazol-1-yl)-2*H*-chromen-2-ol, chromenol-triazol hybrid, antimicrobial activity.