Antimicrobial Effects of Tris (Ethylenediamine) Cobalt(III) Chloride - Cobalt Complex

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Humans are commonly exposed to infectious fungal agents that live in the environment, the most common type being yeast infections. Global warming appears to be a contributing factor in the prevalence of drug resistant yeast infections, making the research of effective treatments increasingly important. In this experiment, tris(ethylenediamine)cobalt(III) chloride was tested for antifungal properties on four strains of Candida yeast infections (glabrata, dubliniensis, auris, and auris MYA). The cobalt complex was diluted into YPD growth media using a 1:2 serial fold dilution. Ninety-five µl of the antifungal concentration along with five µl of infection (diluted in YPD to 0.5 McFarland turbidity standard) was pipetted into a 96-well plate. All tests were done in duplicate with positive and negative controls, across all four yeast strains. Once the minimum inhibitory concentration (MIC) was noted, the surrounding six wells (inclusive) were plated on dextrose agar plates to determine the minimum bactericidal concentration (MBC). According to absorbance levels collected by a plate reader, at least one of the tested concentrations of the cobalt complex prevented yeast growth in all strains. MIC and MBC results showed the cobalt complex to be effective against all strains. Overall, tris(ethylenediamine)cobalt(III) chloride was found to have positive antifungal effects on all four of the Candida strains tested.

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