Complexes of transition and nontransition metals of dithiocarbazate ion and their biological activities.

Abstract

The complexation of the dithiocarbazate ion (DTCA−) with various metal ions, viz., Sn(II)/(IV), Bi(III), Sb(III), U(VI), Zr(IV), Th(IV), Al(III), Ni(II), Zn(II), and Cu(II) was investigated. Most of the complexes were hexa-coordinated with the exception of Cu(II), Ni(II), and Zn(II) complexes that were four-coordinated. The biological properties of the metal complexes revealed that in general the complexes of nontransition metals were more effective against microorganisms than those of transition metals. In particular, [Sb(DTCA)Cl2·2H2O] and [Al(DTCA)Cl2·2H2O] were found to have strong antimicrobial activities. A minimum inhibitory concentration of 300 μg/mL was recorded for the above two complexes against Pseudomonas aeruginosa while that against Bacillus cereus was found to be 700 μg/mL. None of the complexes were cytotoxic.

Keyword: Complexes; Dithiocarbazate; Biological activity.