

Abstract

Natural cyclodextrins are cyclic oligosaccharides containing 6, 7 and 8 glucopyranose units, which are bond by $\alpha(1,4)$ -linkages forming a truncated conical structure having hydrophobic interior and hydrophilic rims.

Cyclodextrins are able to form host-guest complexes with the guest molecules that possess suitable polarity and dimension. After inclusion complexes chemical, physical and biological properties of guest molecules can be significantly improved. Especially, cyclodextrin enhance poorly soluble compound in water and improve their bioavailability, stabilize from thermal and oxidative degradation.

The aim of the work was to establish a possibility of obtaining inclusion complex of selected ligands (1,4-dichlorobenzene, thiabendazole, carbendazim, 4-phenylphenol, 2-phenylphenol) with α - and β -cyclodextrin, to obtain formulation that supplied a more use of these fungicides.

The calorimetric titration measurements were performed on selected fungicide of aqueous solution, dimethylformamide, dimethyl sulfoxide and ethanol with various solutions of cyclodextrin. Thermodynamic parameters characterizing complexes of compounds with cyclodextrins, such as entropy, enthalpies and stoichiometric relations of formed complexes and their stability constants were determined using the model of one set of site. The processes of inclusion of hydrophobic groups of fungicides in the macromolecule of cyclodextrins are spontaneous, as evidenced by negative enthalpy values and positive entropy values.

Ultraviolet spectrophotometric studies confirm the increase of water solubility of fungicide due to the increasing cyclic oligosaccharide concentration. Stability constant of complex fungicide with cyclodextrin was determined by method Higuchi and Connors.