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Evaluation of inclusion complexes of α-amylase with hydroxypropyl ß- cyclodextrin

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Monomolecular inclusion complexes of drug molecules in to HP- ß-CD were explored for improving the dissolution, bioavailability, converting liquids into solids, masking unpleasant taste etc. Studies were reported in the write up on inclusion complexation of macromolecules of therapeutic importance with HP-ß-CD with a view to understand their properties and on possible therapeutic applications. α-Amylase (digestive enzyme) and the factors influencing enzymatic activity, namely substrate concentration, pH of the medium, and temperature were investigated. The enzymatic activity of α-amylase was reduced in presence of HP-ß-CD. This decreased enzymatic activity is the same magnitude as normally observed in immobilized enzymes. The optimum pH of α-amylase was 4.9 and was shifted to pH 5.9 in the presence of HP-ß-CD. The temperatures in the working range of 25 to 45°C, the α-amylase activity remained same. When HP-ß-CD was added enzymatic activity was decreased. The decreased enzymatic activity at 35°C may be due to a form of the enzyme. Solid complexes were prepared by three methods, namely physical blending, co-evaporation and lyophilization. The chemical method indicated 1:1 complex and the amylase activity was decreased in solid complexes. The inclusion complexes can be a promise for enzyme delivery for prolonged period.