Effects of Various Cu Complexes Derived from Cu (II) Sulfate on Amylase-starch Complex Rates

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Type 2 Diabetes mellitus is a global issue that is alarmingly increasing. Due to this, the development of research for an alternatively new medication is significant. The effect of various Copper complexes on Amylase-starch complex rates demonstrates inhibition of Copper complexes on Amylase for a new biochemical approach to strengthen hyperglycemia medication. Using Copper complexes is crucial to study as they offer unique benefits however have rarely been tested to target hyperglycemia. Therefore the purpose of this study was to test which ligand-carrying chemical would inhibit the complex rate the most. It was chosen that if Cu (II) Sulfate is an irreversible, noncompetitive inhibitor to Amylase (the enzyme) then when placed with varying ligands of NH3, H20 (control), HCl and NaCl, forming 3 Copper complexes, the Copper complex of HCl or [CuCl4]-2 (Copper (II) Chloride) with a Sulfuric Acid release will have the slowest reaction rate. First an Amylase extract was prepared through mechanical homogenization on potatoes. Next a 1% Starch Solution was prepared to represent the substrate. Then the Copper (II) Sulfate (1 M) was poured with each ligand-carrying chemical to form the Copper complex. Finally the copper complex solution was placed with the enzyme/substrate to inhibit the starch breakdown. A universal indicator tested starch breakdown through varying coloration. Based on the results, it may be concluded the NaCl inhibited the enzyme the most while the HCl inhibited second to best. The NH3 worked least compared to the control.