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Synthesis and Characterization of Fructose Derivatives

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Abstract:
Fructose derivatives have great importance in food, cosmetics, and pharmaceutical industries. The derivatives such as Fructosazone, 1,2,3,4,5-O-acetyl-β-D-Fructosepyranose and D-Fructose pentabenzoate were synthesized and characterized by Melting Point, Chemical test, UV and IR. Fructosazone was prepared by the condensation of fructose with phenylhydrazine. 1,2,3,4,5-O-acetyl-β-D-fructosepyranose was prepared by acetylation of fructose with acetyl chloride in the presence of sodium acetate. D-Fructose pentabenzoate was prepared by the benzoylation of fructose with benzoyl chloride in the presence of sodium hydroxide. The percentage yields of Fructosazone, 1,2,3,4,5-Penta-O-acetyl- β -D-fructosepyranose and D-Fructose Pentacetate were 54.66%, 56.7%, and 66.28% respectively. The synthesized derivatives were characterized by performing chemical tests. Melting points were determined that showed the purity of the compound. UV/visible analysis indicated the chromophoric groups present in derivatives. IR analysis indicated the functional groups present in the synthesized derivative. The carbohydrate-derived fructose derivatives are stable and were obtained in good yield.

Keywords: Fructose derivatives, condensation, acetylation, benzoylation, infrared, ultraviolet.