

N-, S-glycosides: Some organic and inorganic aspects of a few glycosides

AJAY KUMAR SAH^a, T MOHAN DAS^a, E K WEGELIUS^b,
E KOLEHMAINEN^b, P K SAARENKETO^b, K RISSANEN^b and
CHEBROLU P RAO^a

^aBioinorganic Laboratory, Department of Chemistry, Indian Institute of
Technology Bombay, Powai, Mumbai 400 076, India

^bDepartment of Chemistry, University of Jyväskylä, Jyväskylä 40351,
Finland

Glycosides are of biological and pharmaceutical interest. To understand the genesis of glycosidic bond formation and the influence of metal ions on this, we have taken up a systematic study both with N- and S-glycosides. A few glycosylamines of a biologically active molecule, 3,6-ethylidene-D-glucopyranose, which acts as a reversible inhibitor of human erythrocyte transporter, have been prepared using different aryl amines. These glycosidic products are characterized by simple analytical, spectral and crystallographic techniques. Role of different metal ions on the glycosidic bond formation has also been studied. Several metal complexes have been synthesized with one of the glycosylamine and the products have been characterized based on spectral and analytical techniques in order to establish their structures.

Biologically important S-glycosides, which are of use in Wilson and Menkes diseases, are also prepared from different saccharides. One of these S-glycosides, D-glucobenzothiazoline, has been subjected to complexation studies with transition metal ions. Several complexes have been synthesized, isolated, purified and characterized by a number of analytical, spectral and electrochemical techniques. All these compounds have been found to be compositionally and structurally different from each other. ¹H, ¹³C NMR and EPR spectra have been found to be crucial in establishing the structures of these molecules.

Acknowledgement

AKS, TMD and CPR are grateful to Professor K Rissanen and his group at Jyväskylä University, Finland for the crystallographic facilities.