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CARBOHYDRATE RESEARCH

Introduction

Progress in structure analyses on carbohydrates and polysaccharides

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Once upon a time, only the X-ray diffraction method had been available to determine the 3D structures of carbohydrates. This can be used to analyze the whole molecular structure in detail, and even now it is still the royal road for 3D structure analyses, in particular, of polysaccharides. However, the X-ray method works only for the crystalline state of carbohydrates, at least in the molecular level analysis, and it cannot be used in the amorphous state and in solution, which are of great importance in chemical and biological worlds. Recent dazzlingly rapid developments in NMR and calculation chemistry do not only compensate for the deficiency of the X-ray method in solid state but also reveal the conformations and interactions of carbohydrates in solution. In addition, dynamic structure analyses for carbohydrates and polysaccharides are also available. When these three methods are combined, they undoubtedly will become more powerful tools.

This unit includes these three methods, individually or jointly, for analyzing carbohydrate (polysaccharide) conformations and interactions between carbohydrate (polysaccharide) and other chemicals.

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