

ABSTRACT

The work reported in this thesis falls naturally into three parts:

Part I reviews the occurrence of Dextrans and related compounds appearing in the chemical literature and the methods used in their structural elucidation.

Part II describes the isolation and characterisation of two dextrans elaborated by two purified strains of Leuconostoc mesenteroides. Both dextrans (I, II) differ from conventional polysaccharides of this type in having highly branched structures. Dextran I has a fairly high percentage of the expected (1 → 6) α-D-glucopyranosyl linkages (75%) as determined by periodate oxidation studies, but the number of branching points (25%) is unusually high for a dextran-type polysaccharide. Dextran II showed an even higher degree of branching viz. - 63% (1 → 6) α-D-glucopyranosyl linkages and 31% branching points.

The molecular weight ranges of both dextrans were of the order of 10^6 - 10^8 .

Part III describes some preliminary related work on the relative reactivity of hydroxyl groups in monosaccharide molecules. The compounds used as substrates were the 4,6-O-alkylidene glucopyranosides. The results indicate that, in this set of compounds, the steric effect of the 4,6-acetal substituent is the dominant factor in determining the relative reactivities of the remaining hydroxyl groups.