X-ray Diffraction Analysis of the O(H) Blood-group-specific *Ulex europaeus* Lectin I

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Introduction

The first lectin from *Ulex europaeus* (UE-I) has been shown to bind the human H-type 2 blood group determinant [1]. The H-type 2 blood group determinant is the trisaccharide [α-L-Fucα(1→2)-β-D-Galβ(1→4)-β-D-GlcNAcα-], and it is the antigenic determinant present on O-type erythrocytes [2].

Methods and Materials

As part of the examination into the structural nature of the recognition of the H-type 2 blood group determinant by UE-I, crystals of UE-I in complex with the methyl-glycoside of the H-type 2 trisaccharide (H-type 2-OMe) were subjected to x-ray diffraction analysis. Diffraction data were collected on beamline BM-14-C of the Bio Consortium for Advanced Radiation Sources (BioCARS) facility at sector 14 of the APS. The UE-I:H-type 2-OMe complex crystallizes in the orthorhombic space group $C222_1$, with unit cell dimensions a = 88.80 Å, b = 164.75 Å, and c = 77.42 Å, and a single UE-I dimer is present within the asymmetric unit. Diffraction data were collected to 2.3-Å resolution; however, the data were truncated to 3.0-Å resolution.

Results and Discussion

The preliminary structure of the UE-I:H-type 2-OMe complex at 3.0-Å resolution has contributed to the understanding of the critical protein:carbohydrate interactions that occur between UE-I and the H-type 2 blood group determinant during O-type erythrocyte recognition and binding.

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