# Electron diffraction study on the polysaccharide from *Watsonia pyramidata* corm sacs

**H. Chanzy*, F. P. Booy and E. D. T. Atkins**
*H. H. Wills Physics Laboratory, University of Bristol, Royal Fort, Tyndall Avenue, Bristol BS8 1TL, UK*
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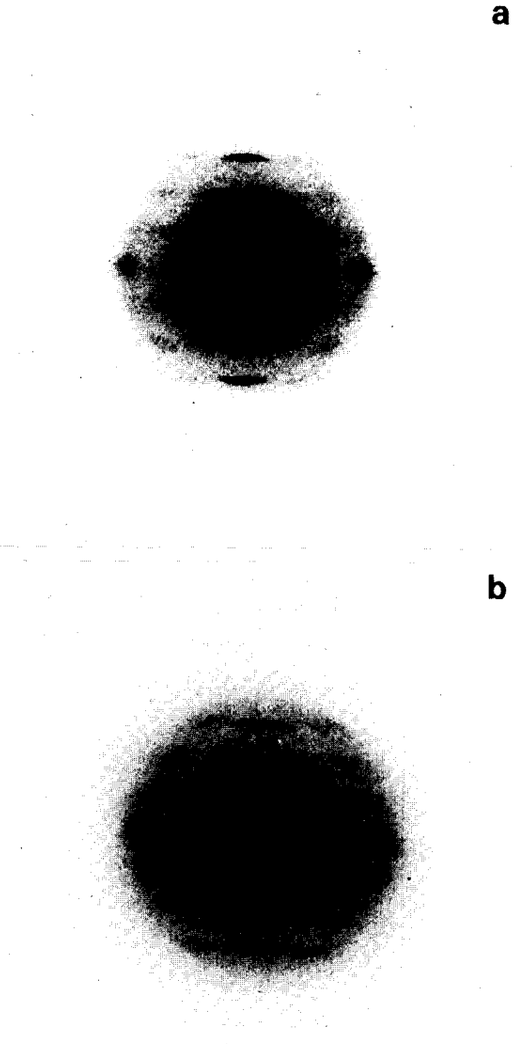
Electron diffraction patterns were obtained from stretched films and thin fibres of the gummy polysaccharide found in the corm sacs of the plant *Watsonia pyramidata.* The quality of the diffraction photograph obtained depended on the experimental technique and conditions employed but is essentially in agreement with the X-ray diffraction results reported by Lelliott *et al.* in the previous paper.

## EXPERIMENTAL

Fragments of *Watsonia* corms were immersed in distilled water at room temperature for about 30 min. During this period, the xylan storage granules located at the surface swelled extensively and exhibited a jelly-like consistency. Several swollen granules were then picked up with tweezers and transferred on a glass slide positioned on the stage of a low power polarizing stereoscopic microscope. During the observation, it was noticed that the material was isotropic when wet but became birefringent upon drying. When a tacky consistency was reached, the sample could be stretched and at this point films or fibres could be easily prepared. If at this moment a carbon coated electron microscope grid was rubbed against the sample, a thin film of oriented polysaccharide could be transferred onto the grid where it crystallized on drying while maintaining its orientation. This method enabled films thin enough to be observed with the transmission electron microscope at 100 kV.

A Philips EM 301 was used for the experiment which consisted essentially of recording selected area electron diffraction. For the specimen insertion in the microscope two different techniques were used. In some cases no precautions were taken and the sample dried readily in the evacuated electron microscope column. This gave the electron diffraction pattern illustrated in *Figure 1a.* Alternatively, the specimens were kept overnight in an atmosphere of 96% relative humidity. The grids were then mounted on a cooling specimen holder, quenched in liquid nitrogen, and introduced frozen in the electorn microscope following a method described earlier[1]. With such a technique an improved electron diffraction pattern was obtained as shown




* Permanent address: Centre de Recherches sur les Macromolecules Vegetales, CNRS, 53X-38041 Grenoble, France.

*Figure 1* Electron diffraction photographs recorded from the polysaccharide from *Watsonia pyramidata* corm sacs. (a) Obtained with sample at room temperature in usual vacuum conditions. (b) Obtained with the sample frozen at low temperature after first allowing sample to equilibrate at high relative humidity overnight

in *Figure 1b*. The pattern indexes on a trigonal unit cell with dimensions corresponding to the high humidity version of the X-ray diffraction pattern.

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REFERENCES

1 Chanzy, H., Roche, E. and Vuong, R. *Kolloid Z.* 1971, **248**, 1043