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Protocol for derivatization and determination of structural monosaccharides in crude fungal exopolysaccharide

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ABSTRACT

Polysaccharides are composed of monomeric simple sugars exhibiting substantial diversity for functional groups, found being suitable for vast biological activities in different living organisms. Difficulties in isolation, purification by professional methods and using costly equipment are the multiple challenges of characterizing the nature and properties of these important components of living cells. Several methods have been applied for the qualitative analysis of the carbohydrates. However, GC and GC-MS are the most appropriate techniques ever used to analyze complex structures of polysaccharide. Notably, so far, no commercial kit has been developed and offered, particularly for derivatization of polysaccharides. This study aims to confer a modified protocol for suitable derivatization of structurally unknown polysaccharides. The fungal exopolysaccharide from *Neopestalotiopsis* sp. has been used as the sample in this study. The study has established the multiple manual steps of the alditol acetate derivatization. The modifications have been highlighted as follows:

- Trifluoroacetic acid (TFA) has been used instead of conventional trichloroacetic acid for hydrolyzing the crude exopolysaccharide.
- The standard sugars were treated separately, but not in the complex mixture.
- The simplicity of the method, using ordinary instruments and short time accomplishment of procedures, collectively makes this technique as the most applicable in a common research laboratory where no more sophisticated equipment is available.

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

T. Fooladi, M. R. Soudi, N. Alimadadi, P. Samedoroudi, M. M. Heravi. Bioactive exopolysaccharide from *Neopestalotiopsis* sp. strain SKE15: Production, characterization and optimization. Int. J. Biol. Macromol. 129 (2019) 127–139. Shaw, D. H. & Moss, G. W. J. Chromatogr. 41 (1969) 350.

Derivatization
Protocol.pdf

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