

# **Isolation, Separation and Identification of the Extracellular Polymeric Substance (EPS) Protein Fraction from the Activated Sludge Floc**

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## **ABSTRACT**

The purpose of this study was to expand the current knowledge of the composition of extracellular polymeric substances (EPS), principally EPS proteins, and their influence on structure, stability and surface chemistry of microbial flocs in activated sludge. It was proposed that a substantial portion of EPS proteins contains glycoproteins, which would explain the EPS stability. Various buffer additives, purification and precipitation methods were employed for protein purification and several glycoprotein detection methods were utilized for glycoprotein detection in the EPS. The proteins were separated with success, with a substantial portion suggesting possible glycosylation. An enzyme, oligoendopeptidase F from M3B family was identified as a major protein present. These results suggest that glycoproteins in the activated sludge EPS may exist in a very intricate arrangement. Furthermore, the EPS peptides may get degraded by naturally present enzymes in the EPS after the protein is digested prior to mass spectrum (MS), making the identification challenging.