sschi SLOVAK SOCIETY OF CHEMICAL ENGINEERING

**Slovak Society of Chemical Engineering**
**Institute of Chemical and Environmental Engineering**
**Slovak University of Technology in Bratislava**

# PROCEEDINGS

**51st International Conference of the Slovak Society of Chemical Engineering SSCHE 2025**

**Hotel DRUŽBA**
**Jasná, Demänovská Dolina, Slovakia**
**May 27 - 30, 2025**

**Editors: Assoc. Prof. Mário Mihaľ**

**ISBN: 978-80-8208-158-2, EAN: 9788082081582**

**Published by the Faculty of Chemical and Food Technology Slovak Technical University in Bratislava in Slovak Chemistry Library for the Institute of Chemical and Environmental Engineering; Radlinského 9, 812 37 Bratislava, 2025**

Fatka, P., Zavřel, F., Hanuš, J., Štěpánek, F.: Yeast -glucan particles and composition of their core, Editors: Mihaľ, M., In *51st International Conference of the Slovak Society of Chemical Engineering SSCHE 2025*, Jasná, Demänovská Dolina, Slovakia, 2025.

# Yeast *β*-glucan particles and composition of their core

Petr Fatka[1], Filip Zavřel[1], Jaroslav Hanuš[1], František Štěpánek[1]

[1]*University of Chemistry and Technology Prague, the Czech Republic*

*e-mail: fatkap@vscht.cz*

**Key words:** *β*-glucan, *β*-glucan particles, drug delivery, Bradford assay

Yeast-derived *β*-glucan particles (GPs) make a promising material for use as a bioactive drug carrier for targeted drug delivery. It has been discovered before that GPs are phagocytosed by immune system cells in the intestine, macrophages specifically, which opens new opportunities of targeted drug delivery. Data from the literature and our laboratory suggest that such particles contain a residue in their centre, which is never discussed in the literature. Such a residue could represent an obstacle for pharmaceutical use of GPs and was, therefore, examined. The composition of the residue remained unknown until the use of Confocal Raman Microscopy, which revealed that it is made of glycogen and protein. Both of these were quantified and attempts to get rid of them were carried out. Quantification of protein content was carried out using Bradford assay and quantification of glycogen was carried out using *α*-amyloglucosidase enzyme and followed by assaying the liberated glucose using an oxidase/peroxidase/*o*-dianisidine kit. Glycogen and protein removal was attempted enzymatically and in case of glycogen by rehydration of yeast in nutrient-poor medium prior to GP preparation. Attempts at removal of glycogen were mostly successful, attempts at protein removal proved to be more difficult and were successful only partially.