

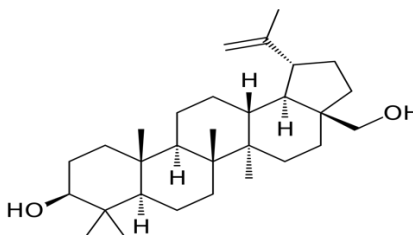
X-15

A PRELIMINARY BIOTRANSFORMATION OF BETULIN BY SOIL MICROBES

F. O. Adepoju,¹ E. G. Kovaleva¹

¹ Institute of Chemical technology, Ural Federal University of the first President of Russia B. N. Yeltsin. Mira St., 19. Yekaterinburg, 620002, Russia
E-mail: besee010@gmail.com

Abstract. Biotransformation involves the use of microbial cells- bacteria, fungi, and enzymes, to catalyse reactions that leads to compounds with relatively greater polarity.¹ Beside improved polarity, biotransformation maintains the original carbon skeleton, involves milder reaction conditions, lower pollution and lesser cost as compared to chemical synthesis². In this study we investigated the possible conversion of betulin by soil microbes into more potent derivatives.



The study entailed primary screening of soil samples from different sources using medium containing carbon, nitrogen and mineral sources that grew in the presence of betulin. Under different conditions, we identified three fungal strains (S1, S2, and S3) that are yet to be identified as well as further bioconversion experiments produced betulonic acid and betulonic acids (Table 1) as detected by high performance liquid chromatography (HPLC-UV).

Table 1. Biotransformation of betulin using isolated microbial strains

Derivatives	# Microorganisms		
	S1	S2	S3
Betulin, mg/ml	1.56	2.69	-
Betulonic acid, mg/ml	1.57	2.04	2
Betulonic acid, mg/ml	12.86	-	-

References

1. Microbial biotransformation: a process for chemical alterations / M. S. Smith, S. Singh, R. Singh // J Bacteriol Mycol Open Access. – 2017. – Vol. 4, Iss. 2. – P. 85
2. Novel biotransformation of betulin to produce betulone by *Rhodotorula mucilaginosa*. / D. B. Mao, Y. Q. Feng, Y. H. Bai [et al.] // Journal of the Taiwan Institute of Chemical Engineers. – 2012. – Vol. 43, Iss. 6. – P. 825–829.

This work was supported by the Ministry of Science and high Education of the Russian Federation (MEGAGRANT, contract No 075-15-2022-1118 dd.29.06.2022).