

The potential of *Lentzea* sp. 7P in producing enzymes of biotechnological interest

Fábulo Junior Nogueira Fernandes ¹, Cleonice Aparecida Salgado ², Marisa Vieira de Queiroz ^{1,2}

¹ Programa de Pós-Graduação em Microbiologia Agrícola, Departamento de Microbiologia, Universidade Federal de Viçosa, Avenida P.H. Rolfs, Viçosa – MG.

² Departamento de Microbiologia, Universidade Federal de Viçosa, Avenida P.H. Rolfs, Viçosa – MG.

* Corresponding author. E-mail: fabulo.fernandes@ufv.br

Actinomycetes are known for the production of secondary metabolites, such as antimicrobials, volatile compounds, and enzymes, with diverse applications. *Lentzea* sp. is a rare genus of Actinomycetota, comprising bacteria found in various ecosystems, such as soil. In this context, the objective of this work was to semiquantitatively evaluate the production of extracellular enzymes of biotechnological interest by *Lentzea* sp. 7P, which was isolated from the ground. The ability of the isolate to produce the enzymes carboxymethylcellulase, xylanase, amylase, and pectinase was evaluated in a minimal medium supplemented with carboxymethylcellulose (CMC), xylan, starch, and pectin, respectively. After seven days of incubation, substrate degradation halos were observed, and the values were measured and expressed in millimeters. Mean values, standard deviation, and the enzyme activity index (IE) were calculated. The IE value was obtained by dividing the average diameter of the degradation halo by the average diameter of the colony halo. Therefore, the isolate was considered a good enzyme producer when $IE \geq 2$. The IE index was calculated as follows: pectinase ($IE = 2.9 \pm 0.07$), amylase ($IE = 1.7 \pm 0.07$), xylanase ($IE = 2.8 \pm 0.13$), and CMCase ($IE = 2.24 \pm 0.08$). For the production of pectinase, a higher IE was observed, whereas for amylase, a lower one was recorded. These enzymes are widely used in the food, pharmaceutical, textile, and agricultural industries. Therefore, the data obtained in this work show that *Lentzea* sp. 7P has promising enzymes with biotechnological potential. Enzymes of microbial origin offer numerous advantages over those produced by plants and animals, including lower production costs and the potential for large-scale production, among others.

Key words: Biotechnology; Microbiology; Actinobacteria; Enzyme Potential.

O potencial de *Lentzea* sp. 7P em produzir enzimas de interesse biotecnológico

Lentzea sp. é um gênero raro de Actinomycetota, o qual compreende bactérias presentes em vários ecossistemas, como o solo. Neste contexto, o objetivo deste trabalho foi avaliar de forma semiquantitativa a produção de enzimas extracelulares de interesse biotecnológico (carboximetilcelulase, xilanase, amilase e pectinase) por *Lentzea* sp. 7P isolada do solo. O índice de IE foi calculado (pectinase: $IE = 2,9 \pm 0,07$; amilase: $IE = 1,7 \pm 0,07$; xilanase: $IE = 2,8 \pm 0,13$; CMCase: $IE = 2,24 \pm 0,08$). *Lentzea* sp. 7P possui enzimas promissoras com potencial biotecnológico.

Palavras-chave: Biotecnologia; Microbiologia; Actinobactérias; Potencial Enzimático.

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