



“Gheorghe Asachi” Technical University of Iasi, Romania



**GREEN TECHNOLOGY FOR 6-AMINOPENICILLANIC ACID
PRODUCTION - STUDY OF PENICILLIN G HYDROLYSIS IN A
BIOREACTOR WITH MOBILE BED OF IMMOBILIZED
PENICILLIN AMIDASE UNDER SUBSTRATE INHIBITION**

**Ramona Mihaela Matran¹, Anca-Irina Galaction², Alexandra Cristina Blaga¹,
Marius Turnea², Dan Cașcaval^{1*}**

¹*“Gheorghe Asachi” Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,
Dept. of Organic, Biochemical and Food Engineering, D. Mangeron 73, 700050 Iasi, Romania*

²*“Gr.T. Popa” University of Medicine and Pharmacy of Iasi, Faculty of Medical Bioengineering, Dept. of Biomedical Science,
M. Kogălniceanu 9-13, 700454 Iasi, Romania*

Abstract

The efficiency of enzymatic hydrolysis of Penicillin G to 6-Aminopenicillanic acid under substrate inhibition has been analyzed for a bioreactor with mobile bed of immobilized *penicillin amidase*. The results indicated that the optimum values of temperature and pH remained the same as for homogeneous hydrolysis using free enzyme. The inhibitory effect induced at higher Penicillin G amount in liquid phase was attenuated by increasing the size of the biocatalyst particles. For this reason, at substrate concentration over 150 mol/m³, the highest volumetric productivity of hydrolysis process was recorded for the larger particles of immobilized enzyme. The proposed mathematical correlation between the volumetric productivity, Penicillin G concentration and biocatalyst diameter offers a good concordance with the experimental data, the average deviation being of ±4.53%.

Key words: bioreactor, 6-Aminopenicillanic acid, Penicillin, *penicillin amidase*, productivity

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