

PREFACE

Increasing interest for microbial production of cyclodextrins reflects the general trend in the use of biocatalysis/biotransformation having evident advantages to fermentation and traditional technologies.

The history of study of cyclodextrins exceeds 100 years but this field is still developing intensively covering more fundamental and applied issues. Along with enlargement of the areas of practical application of cyclodextrins comprising pharmaceuticals, cosmetics, food and chemical industries there is a dramatic increase in R&D for obtaining of new cyclodextrins and their derivatives. Outstanding achievements in gene cloning and overexpression of cyclomaltoextrin glucanotransferases genes provide a solid background for high economic production of cyclodextrins and their expansion into the world market.

Having specific and unique activity for formation of cyclic inclusion complexes, cyclodextrins may catalyze chemical reactions and are excellent models of enzymes. In this respect the catalysis occurring after such complexing represents an efficient tool for study of "host-guest" relationships. Cyclodextrins nowadays are more available and cheap compounds used for complexing purposes with a broad perspectives of practical application in many fields of science and industry.

From microbiological point of view cyclodextrins represent the products of microbial biosynthesis closely related to the cell differentiation, particularly to the sporulation. On the other hand, summarizing the literature and our experimental data we can conclude on the existence of the species specificity in production of certain types of these substances. So, the strategy in the search of new cyclodextrins has to be based on the screening of new species of their producers what attracts a keen interests of microbiologists.

The Institute of Microbiology of the National Academy of Sciences of Armenia is engaged in the study of cyclodextrins biosynthesis for 20 years. In the beginning the research efforts aimed to establish biosynthetic activity of cyclodextrins production by different species of aerobic spore-forming bacilli, especially their extremophilic forms. Later the essential progress in this field was associated with the active involvement of the research team headed by Dr. V. Abelian. Many microbial species including extremophilic forms of bacilli and actinomycetes have been isolated, studied and applied for the production of cyclodextrins. The action patterns of cyclomaltoextrin glucanotransferases has been elucidate and new branched, substituted as well as polymeric cyclodextrins have been synthesized and tested in the solutions treatment, enantiomer resolution of optically active compounds and for stabilization of different substances and drugs.

Due to substantial support of the International Science and Technology Center within the Project A-326 the researches mentioned have been developed in many spheres of production and use of cyclodextrins with large international co-operation.

On behalf of our personnel and my own behalf I wish to express sincere thanks to all authors participated in this issue.

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