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The role of microbial dormancy autoinducers in metabolism blockade

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Abstract

Alkyl-substituted hydroxybenzenes (AHBs), which are autoinducers of microbial dormancy (d1 factors), were found to stabilize the structure of protein macromolecules and modify the catalytic activity of enzymes. In vitro experiments showed that C6-AHB at concentrations from 10-4 to 10-2 M, at which it occurs in the medium as a true solution and a micellar colioid, respectively, nonspecifically inhibited the activity of chymotrypsin, RNase, invertase, and glucose oxidase. C6-AHB-induced conformational alterations in protein macromolecules were due to the formation of complexes, as evidenced by differences in the fluorescence spectra of individual RNase and C6-AHB and their mixtures and in the surface tension isotherms of C6-AHB and trypsin solutions. Data on the involvement of dormancy autoinducers in the posttranslational modification of enzymes and their inhibition will provide further insight into the mechanisms of development and maintenance of dormant microbial forms.

Keywords

Alkyl-substituted hydroxybenzenes, D1 factors, Dormancy, Dormancy autoinducers, Metabolism blockade, Structural modification of enzymes