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## Structure and properties of complexes of $\alpha$ -chymotrypsin with hydroxyl-containing gemini dicationic surfactants with a spacer moiety of varying length

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### Abstract

© 2014 Pleiades Publishing, Ltd. The structure and properties of supramolecular complexes of  $\alpha$ -chymotrypsin with hydroxyl-containing alkyl ammonium gemini surfactants (GSs) -  $\alpha,\omega$ -alkanedyl-bis(hydroxyethylmethylcetyl ammonium dibromides), with a polymethylene spacer of varying length have been studied. IR spectroscopy and tryptophan fluorescence data show that the interaction of GSs with  $\alpha$ -chymotrypsin leads to changes of different intensity in the structural state of proteins. The most probable complexation mode of enzyme with GSs have been proposed by the molecular docking method. A correlation is found between the activity of  $\alpha$ -chymotrypsin and the length of the GS spacer moiety. The enzyme activity correlates with the change in the substrate concentration in the aqueous phase of the surfactant micellar solution.

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### Keywords

catalytic activity, gemini surfactants complexes, structure,  $\alpha$ -chymotrypsin