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Analysis of screening and bioinformatics of antithrombotic peptides in casein molecules from bovine milk

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Thrombotic disease, caused by thrombosis and thromboembolism, is seriously harmful to human health and is one of the major causes of death in modern society. Blood clotting can be prevented by anticoagulant drugs by influencing some impact factors in the blood coagulation process. Food-derived biological peptides with anticoagulant activity have many advantages, such as fast absorption and low side effects, which are attracting more and more attention on anticoagulants studies. Casein is a good source of bioactive peptides. In the present study, α s1-, α s2-, β - and κ -casein were selected for in silico digestion and the theoretic peptides from them were predicted. Antithrombotic peptides from α s1-, α s2-, β - and κ -casein were screened by bioinformatics analysis based on the amino acid sequences of antithrombotic peptides reported. Molecular docking was adopted to confirm some new anticoagulant peptides. One peptide from α s2-casein, Ser-Ser-Glu-Glu-Ser-Ile-Ile-Ser-Gln-Glu-Thr-Tyr-Lys-Gln-lu-Lys-Asn-Met-Asp, showed better affinity activity with thrombin based on the results of bioinformatics analysis. The result from this study could provide some theoretical information for the application of antithrombotic peptides in functional food industry especially in dairy nutrition.

Biography

Maolin Tu is a PhD candidate of Department of Food Science and Engineering in Harbin Institute of Technology and a member in the research group of Prof. Ming Du, and major in Functional Food.

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