

New clot-dissolver developed using recombinant technology

Researchers at the Institute of Microbial Technology (IMTECH), Chandigarh, India, have used recombinant technology to design and develop an improved version of streptokinase, a substance used for dissolving blood clots in patients suffering from heart attacks. The second-generation recombinant streptokinase is said to be clot specific and is therefore free of the side effects commonly associated with other clot-dissolving agents that act in the whole circulatory system.

In recent years, the administration of clot-dissolving proteins such as streptokinase, tissue plasminogen activator (TPA) and urokinase – which work by activating plasminogen to its active form, plasmin – has revolutionized the treatment of a range of circulatory disorders including myocardial infarction or heart attack. But at a clinically effective dose, these drugs induce the formation of plasmin in the whole circulatory system, instead of acting on just the blood clot. The result is the enzymatic degradation of clotting factors, including fibrinogen, and consequent haemorrhagic complications in a significant proportion of patients.

IMTECH researchers have designed second-generation molecules that possess a strong fibrin affinity as well as an initially delayed rate of plasminogen activation. This results in the slow regeneration of the active form (streptokinase-plasmin) and the consequent overall increase in the half-life of clearance of the activator, leading to a more sustained anti-fibrinolytic state. These two properties reduce the generalized plasminogen activation and its side effects. (NewsIndia, May 2000)