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Overview of Plasminogen

Devrishi Goswami *

**Research Associate, The SCRIPPS Research Institute, USA*

***Corresponding author:** *Goswami D, Research Associate, The SCRIPPS Research Institute, USA. E-mail: dgoswami@scripps.edu*

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Abstract

The Plasmin is released as a zymogen called plasminogen (PLG) from the liver into the systemic circulation. Humans have two types of glycoforms for the plasminogen that is type-1 is comprised of N- linked (to N289) glycosylation and O-linked (to T346) glycosylation for type-2 plasminogen only consists of single O-linked sugar to T346. However, most of the cell surface favors type-2 plasminogen over the type-1 glycoform, whereas type-1 is commonly found on the surface of the blood clots.

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Binding of these plasminogen to the cell surface leads to the conversion into the active plasmin by various enzymes such as tissue plasminogen activator (tPA), urokinase plasminogen activator (uPA), kallikrein, and factor XII (Hageman factor). Plasminogen fibrin is activated by the tissue plasminogen activator, is one of the major cofactor responsible for the blood clotting activity. The release of the plasmin from plasminogen takes place by the breaking of the peptide bond present between the Arg-561 and Val-562, which in return leads to the production of the angiostatin.

The activation of the plasminogen occurs by the Tissue- type plasminogen activator (t-PA) which binds to the fibrin leading to the sufficient release of the plasmin at the fibrin surface simultaneously resulting in the blood clotting. The direct activation of the plasminogen by the affinity y for the single- chain urokinase- type plasminogen activator (scu-PA) which is 20 times lower than that of the urokinase enzyme. The fibrin is inactive within the plasma.Inactivation of the plasmoinogen activator can be accomplished by the small molecule called PAI-1 inhibitor PAI-039. The binding of the PAI-039 to the active site of PAI-1, results in reversible inactivation of the PAI-1.

Thus, Journal of Analytical & Bioanalytical Techniques has recently published the an original article which deals with the plasminogen aspects by the use of the DoE Approach which is entitled as “New Electrophoretic Method for Separating Glu and Lys Plasminogen by using DoE Approach.” This journal aims to reach the every molecularity research topic of the biology with the help of the chemical approach to it, thus, fulfilling the appropriate use of the bio analytical techniques that would bring the great advances in this field.

This particular article deals with how the new development of the electrophoretic method can cleave the peptide bond present between the Glu and Lys plasminogen, which has given the elaborated form of the result which describes that attainment of the robust and a reproducible separation of the GluI, GluII, LysI and LysII protein band. This, article also got the positive comments from the reviewer’s that provided the strong support for its publication.