

**DETEKSI *LAMININ RECEPTOR* 67 kDa  
PADA SEL  $\beta$  PANKREAS TIKUS (*Rattus norvegicus*  
Berkenhout, 1769) SEBAGAI TARGET TERAPI DIABETES  
MELLITUS DENGAN ADENO ASSOCIATED VIRUS**

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**INTISARI**

Diabetes mellitus merupakan penyakit yang disebabkan oleh adanya gangguan genetik, fisiologis, dan lingkungan. Diabetes mellitus tipe 1 merupakan diabetes yang disebabkan oleh autoimun terhadap sel beta pankreas. Salah satu solusi pengobatan adalah melalui pendekatan terapeutik, namun pendekatan tersebut menuntut sistem *delivery* yang sangat akurat untuk mengurangi efek samping terhadap sel atau jaringan lain (non-target). Pengembangan sistem *delivery* melalui usaha penemuan protein spesifik ditujukan untuk interaksi virus dan sel target. Komunikasi dan interaksi antar protein reseptor virus dengan protein ligan menuntut adanya kesesuaian konformasi kedua protein tersebut. Beberapa penelitian transduksi sel beta pankreas menunjukkan penggunaan Adeno-Associated Virus telah berhasil dilakukan pada manusia dan pada tikus. Salah satu protein yang mampu menjadi ligan bagi Adeno-Associated Virus untuk melakukan transduksi beberapa sel manusia dan tikus adalah protein *Laminin Receptor* 67 kDa. Namun keberadaan protein *Laminin Receptor* 67 kDa pada sel beta pankreas belum diketahui. Tujuan penelitian ini adalah mempelajari keberadaan protein Laminin Receptor 67 kDa pada sel beta pankreas. Hewan uji menggunakan tikus diabetes tipe 1 hasil induksi berulang menggunakan streptozotocin dosis rendah, yaitu 40 mg/kg berat badan. Tiga kelompok tikus yang masing-masing berisi 3 ekor tikus diinduksi setiap hari dengan lama induksi bervariasi, yaitu 2, 7 dan 14 hari beserta kelompok tikus kontrol (tanpa induksi). Setelah diinduksi, pankreas tikus diangkat dan dilakukan RT-PCR dan uji imunohistokimia pada jaringan pankreas. Keberadaan Laminin Receptor 67 kDa pada membran sel beta pankreas diuji dengan imunohistokimia menggunakan antibodi Anti- dan RT-PCR gen Laminin receptor 37 kDa. Berdasarkan pengujian menggunakan RT-PCR dan imunohistokimia dapat diketahui bahwa Laminin Receptor 67 kDa (LR 67kDa) tidak ditemukan pada membran sel beta pankreas tikus normal (tanpa induksi) dan tikus induksi 2 hari namun ditemukan pada membran sel beta pankreas yang mengalami diabetes tipe I setelah diinduksi streptozotocin selama 7 hari.

**Kata Kunci:** Diabetes mellitus, Adeno Associated Virus, Sel Beta, Laminin Receptor

**DETECTION OF 67 kDa LAMININ RECEPTOR  
PANCREATIC  $\beta$  CELL IN THE RAT (*Rattus norvegicus*  
Berkenhout, 1769) AS TARGET OF DIABETES MELLITUS  
GEN THERAPY BY ADENO ASSOCIATED VIRUS**

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**ABSTRACT**

Diabetes mellitus is a disease caused by the existence of genetic disorders, physiological, and the environment. Type 1 DM is a chronic illness characterized by the body's inability to produce insulin due to the autoimmune destruction of the beta cells in the pancreas. One of the treatment solutions is through therapeutic approach, but this approach requires very accurate delivery system to reduce the side effects of the cell or other tissues (non- target). The development of delivery system through the discovery of specific protein intended for the interaction of the virus and target cells. Communication and interaction between the receptor protein of the virus with protein ligand require a compliance of conformity of both proteins. Some research of the pancreas beta cells transduction shows the use of Adeno-Associated Virus has been successfully performed in human beings and on rats. Laminin receptor 67 kDa (LR 67 kDa) is One of the proteins that are able to be ligands for the Adeno-Associated virus to perform transduction some human cells and rats. But the existence of it on the pancreas beta cells has not confirmed. The purpose of the research is to learn the existence LR 67 kDa on the pancreatic beta cells. The object of the Test is rat with type 1 DM as the results of repeatedly induction using low dose streptozotocin, namely 40 mg/kg body weight. Three groups of rats each of which contains 3 rats induced every day with a varied range of induction time, i.e. 2, 7 and 14 days along with the group of control rat (without induction). After induced, the pancreas of the rat removed later done RT-PCR and immunohistochemical test on pancreatic tissue. The existence of LR 67 kDa on pancreatic beta cell membranes was tested by immunohistochemical using antibodies Anti- and RT-PCR of LR 37 kDa gene. Based on the testing using RT-PCR and immunohistochemical showed that LR 67 kDa is undetected on the membrane of pancreatic beta cells of normal rats (without induction) and 2-day induction rats but was detected on the membrane of pancreatic beta cells of the rats with diabetes type I after induced by streptozotocin for 7 days.

**Keyword:** Diabetes mellitus, Laminin Receptor, Beta Cells, Adeno-Associated Virus