

EXPERIMENTAL MODELS OF DIABETES MELLITUS

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EKSPERIMENTALNI MODELI DIJABETES MELITUSA

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APSTRAKT

*Early studies on pancreatectomised dogs confirmed the central role of the pancreas in the homeostasis of glycemia and resulted in the discovery of insulin. Today, hundreds of different animal models are used in experimental studies of diabetes. The aim of this review is to present experimental models of type 1 and type 2 diabetes. In preparing for this review, we searched the electronic databases **Medline, Highwire, and Hinari**.*

The majority of the experiments are conducted on rodent models (mice and rats). Selective inbreeding resulted in the development of numerous models with pathogenic characteristics and the manifestation of type 1 and 2 diabetes and the related phenotypes of obesity and insulin resistance. In addition to analyzing the pathogenic mechanisms of the disease and its complications, these models are used to evaluate new treatment solutions as well as the transplantation of beta cells and disease prevention. New animal models have been created using techniques based in molecular biology and genetic engineering: transgenic, knockout and tissue-specific knockout models. These are very powerful methods, which may lead to exciting results in the future.

Key words: animal models, experimental diabetes, mouse, rat

SAŽETAK

*Prve studije rađene na psima kojima je prethodno uklonjen pankreas potvrdile su centralnu ulogu pankreasa u homeostazi glikemije i doprineli otkriću insulina. Danas, veliki broj različitih eksperimentalnih modela se koristi u istraživanjima u oblasti dijabetesa. Cilj ovog revijskog rada je da predstavi neke od ovih modela, koristeći kao literaturu originalne i revijske radove elektronskih baza **Medline, Highwire i Hinari**.*

Većina laboratorija koristi selektivnim inbridingom dobijene miševe i pacove, kao i transgene i nokaut životinje dobijene genetskim inženjeringom, koje zbog svojih karakteristika (npr. gojaznost, rezistencija na insulin) predstavljaju idealne eksperimentalne modele za dijabetes tip 1 ili 2. Ovi eksperimentalni modeli koriste se kako za ispitivanje patogeneze dijabetesa tako i za ispitivanja novih terapijskih sredstava u lečenju šećerne bolesti.

Ključne reči: animalni modeli, eksperimentalni dijabetes, miš, pacov



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