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## Insulin regulatory secretory pathway: Role of thyrotropin releasing hormone

Thyrotropin-releasing hormone (TRH) was found in various locations. Pancreatic TRH is colocalized with insulin in the secretory granules of  $\beta$  cells. High TRH expression in the pancreatic islets in perinatal rat coincides with maturation of the insulin secretory responsiveness to glucose. Prepro-TRH gene disruption in mice results in hyperglycemia, accompanied by impaired insulin response to glucose. We showed that secretion of TRH from islets is stimulated by glucose and inhibited by insulin or somatostatin. These data indicate specific relation between TRH and glucose-induced insulin secretion. To induce acute shortage of TRH we blocked the terminal step of the post-translational TRH maturation in adult rat *in vivo* by disulfiram (DS, 5 day i.p. 200 mg/kg pretreatment) and tested insulin secretion from isolated islets *in vitro*. TRH in physiological concentration (1 nM) did not affect basal or glucose stimulated insulin secretion. Release of insulin from DS-treated pancreatic islets under basal (unstimulated) conditions was four times higher compared to controls and could not be further stimulated by high-glucose. Addition of 1 nM TRH in the incubation medium decreased basal insulin secretion to control levels and normalized response to 16.7 mM glucose of islets from DS treated rats. We conclude that TRH is essential for insulin direction from constitutional to regulatory secretory pathway. This function might be disturbed in type 2 diabetes mellitus.

## Biography

Vladimir Strbak, MD and DSc, has completed his study in Bratislava. He was Director of the Inst. Exp. End.SAS, Head of Pathological Physiology, Slovak Med. Univ., President of the Slovak Physiological Society, Council Member FEPS, Chair of the Scientific Board of the Slovak Academy of Sciences for Medical Sciences, Council Member of the International Society for Pathophysiology. He has published 118 PubMed papers. He organized series of symposia on Hormones in Milk (5) and Cell volume and function (2) and FEPS meeting in Bratislava. He served as Organizing Committee member of the 6th Global Diabetes Summit and Medicare Expo in Dubai (2015).

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