

Rho-kinase and its metabolic action

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Obesity has reached epidemic levels in the United States and worldwide, and poses an increasingly severe economic burden. Obesity is a major risk factor for developing insulin resistance, impaired glucose tolerance, type 2 diabetes, dyslipidemia and hypertension, all of which are predispose patients to cardiovascular comorbidities. This cluster of medical disorders is called the metabolic syndrome. Data emerging from several laboratories over the past decade indicate that the Rho-kinase (or Rho-associated coiled-coil-containing kinase; ROCK) signaling pathway plays a pivotal role in various metabolic syndrome-related disorders, including cardiovascular diseases (CVD). Recent studies demonstrate that ROCK is an important regulator of insulin and leptin action in the context of glucose and energy homeostasis. In this talk, I will outline recently-described ROCK-specific functions in hypothalamic neurons in regulating feeding behavior and energy balance, and highlight emerging evidence that ROCK is a molecular mediator underlying the etiopathogenesis of obesity.