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Abstract

Cinnamon has been shown to potentiate the insulin effect through upregulation of the glucose uptake in cultured adipocytes. In the present study, we evaluated the effect of the cinnamon extract on the insulin action in awaked rats by the euglycemic clamp and further analyzed possible changes in insulin signaling occurred in skeletal muscle. The rats were divided into saline and cinnamon extract (30 and 300 mg/kg BW-doses: C30 and C300) oral administration groups. After 3-weeks, cinnamon extract treated rats showed a significantly higher glucose infusion rate (GIR) at 3 mU/kg per min insulin infusions compared with controls (118 and 146% of controls for C30 and C300, respectively). At 30 mU/kg per min insulin infusions, the GIR in C300 rats was increased 17% over controls. There were no significant differences in insulin receptor (IR)- β , IR substrate (IRS)-1, and phosphatidylinositol (PI) 3-kinase protein content between C300 rats and controls. However, the skeletal muscle insulin-stimulated IR- β and the IRS-1 tyrosine phosphorylation levels in C300 rats were 18 and 33% higher, respectively, added to 41% higher IRS-1/PI 3-kinase association. These results suggest that the cinnamon extract would improve insulin action via increasing glucose uptake in vivo, at least in part through enhancing the insulin-signaling pathway in skeletal muscle.

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