Orally administered iodinated recombinant human insulin-like growth factor-I (125I-rhIGF-I) is poorly absorbed by the newborn piglet.

趙振瑞
Donovan SM;Chao JC-J;Zijlstra RT;and Odle J

Abstract

BACKGROUND: The purpose of the current study was to determine the degree to which milk-borne insulin-like growth factor-I (IGF-I) is absorbed. METHODS: Cesarean-derived piglets were fitted with umbilical arterial and venous catheters within 2 h of birth and were administered formula containing 21.7 +/- 1.8 microCi of iodinated recombinant human IGF-1 (125I-rhIGF-I) by orgogastric gavage. Blood samples were taken before administration of the 125I-rhIGF-I (t0) and for 4 h postgavage. Plasma was obtained by centrifugation and total and trichloroacetic acid precipitable radioactivity were determined. Immunoreactive 125I-rhIGF-I was assessed using a polyclonal antibody to human IGF-I. Four hours after feeding, intestines were removed, divided into 13 segments, and flushed with saline. Radioactivity within the small intestinal lumen and wall were measured. RESULTS: Radioactivity in portal blood was higher than t0 at all times points ($p < 0.05$), whereas arterial radioactivity did not differ from t0 until 30 min postgavage. On average 18-20% of total radioactivity in both portal and arterial blood was acid-precipitable, with the proportion decreasing over time ($p < 0.001$). Immunoprecipitable radioactivity averaged 3-5% of the total radioactivity and was higher in portal than arterial blood ($p < 0.05$). Based on a plasma volume of 0.062 +/- 0.005 L and a baseline plasma IGF-I concentration of 1.81 +/- 0.56 nmol/L, absorbed 125I-rhIGF-I represented 0.205% of the total plasma IFG-I pool, whereas 14% of the dose was associated with the lining of the intestine. CONCLUSIONS: Absorption of orally administered IGF-I does not contribute significantly to circulating IGF-I.