The aim of this study was to assess red blood cell glutathione from insulin-sensitive and insulin-resistant individuals before and after an oral glucose dose. Fifteen healthy, young (24 ± 5 years), nonobese (23 ± 2 kg·m⁻²), insulin-sensitive (ISI composite = 6.0 ± 1.2) individuals and 14 healthy, young (22 ± 2 years), nonobese (24 ± 2 kg·m⁻²), insulin-resistant (ISI composite = 2.7 ± 1.1) individuals received a 75 g oral glucose dose. Blood samples were drawn before and for 2 h after glucose ingestion for red blood cell glutathione and serum glucose and insulin concentrations. Glycemia before and after glucose ingestion was similar between groups (p = 0.17), which suggest that hyperinsulinemia compensated impaired insulin sensitivity. Red blood cell total (p = 0.81), reduced (p = 0.79), and oxidized (p = 0.88) glutathione concentrations were similar between groups under fasting and postprandial conditions. However, in response to glucose, increases in total and reduced glutathione conc