

The acute testosterone, growth hormone, cortisol and interleukin-6 response to 164-km road cycling in a hot environment

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Abstract

This study investigated the acute endocrine responses to a 164-km road cycling event in a hot environment. Thirty-four male experienced cyclists (49.1 ± 8.3 years, 86.8 ± 12.5 kg, 178.1 ± 5.1 cm) participating in a 164-km road cycling event were recruited. Blood samples were collected within 0.3–2.0 h before the start (PRE: ~0500–0700 h) and immediately following the ride (POST). Samples were analysed for testosterone, growth hormone (GH), cortisol and interleukin-6 (IL-6). The temperature and humidity during the event were $35.3 \pm 4.9^\circ\text{C}$ and $47.2 \pm 14.0\%$, respectively. Based on the finishing time, results for the fastest (FAST, 305 ± 10 min) and the slowest (SLOW, 467 ± 31 min) quartiles were compared. At POST, testosterone concentration was significantly ($P < 0.05$) lower (PRE, 20.8 ± 8.6 ; POST, 18.2 ± 6.7 nmol · L⁻¹), while GH (PRE, 0.3 ± 0.1 ; POST, 2.3 ± 0.3 µg · L⁻¹), cortisol (PRE, 661 ± 165 ; POST, 1073 ± 260 nmol · L⁻¹) and IL-6 (PRE, 4.0 ± 3.4 ; POST, 22.4 ± 15.2 pg · mL⁻¹) concentrations were significantly higher than those at PRE. At POST, GH and cortisol were significantly higher for the FAST group than for the SLOW group (GH, 3.6 ± 2.0 and 1.0 ± 0.8 µg · L⁻¹; cortisol, 1187 ± 209 and 867 ± 215 nmol · L⁻¹). Participation in an ultra-endurance road cycling event in a hot environment induced significant acute changes in concentrations of circulating hormones, with a greater augmentation of GH and cortisol in those completing the ride fastest.