Carbohydrate supplementation affects blood granulocyte and monocyte trafficking but not function after 2.5 h of running


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This randomized, double-blind, placebo-controlled study was designed to determine the influence of carbohydrate supplementation on the granulocyte and monocyte response to 2.5 h of high-intensity running [76.7 ± 0.4% of maximal oxygen consumption (VO\textsubscript{2max})]. Thirty experienced marathon runners (VO\textsubscript{2max} 53.4 ± 1.0 mL·kg\textsuperscript{-1}·min\textsuperscript{-1}, age 41.5 ± 1.4 y) were randomly assigned to carbohydrate-supplement (n = 17) and placebo (n = 13) groups. Subjects rested for 10-15 min before a blood sample was taken at 0715, and then ingested 0.75 L carbohydrate beverage or placebo. At 0730 subjects began running at 75-80% of VO\textsubscript{2max} for 2.5 h, and drank 0.25 L carbohydrate or placebo fluid every 15 min. Immediately after the 2.5-h run (1000), another blood sample was taken, followed by 1.5-h, 3-h, and 6-h recovery samples. Carbohydrate supplementation had a significant effect compared with placebo on the pattern of change in plasma glucose and cortisol, and the blood concentration of neutrophils (F\textsubscript{[4, 112]} = 5.13, P = 0.001) and monocytes (F\textsubscript{[4, 112]} = 4.78, P = 0.001), but not on blood granulocyte and monocyte phagocytosis or oxidate burst activity after 2.5 h of intensive running.