

in part by a higher secretion of *trans*-C18:1 (+63 g/day), C20:5 (+1 g/day), C22:6 (+2 g/day) and other C20-C22 fatty acids (+28 g/day).

Unprotected FO addition to dairy cow diet (R infusion) was shown to decrease the milk protein content, to decrease sharply the milk fat content and to increase the secretion of *trans*-C18:1, that arose from changes in rumen ecosystem and was probably the cause of the collapse of mammary lipogenesis. Protected FO addition (D infusion) would decrease the milk fat content and increase the *n*-3 polyunsaturated fatty acid secretion.

Heavy sustained exercise-induced changes in body water compartments. P Ritz¹, N Fellmann², G Pickering², B Beaufrère¹, J Coudert² (¹ *Laboratoire de nutrition humaine*; ² *Laboratoire de biologie et de physiologie du sport, CRNH-Auvergne, 63000 Clermont-Ferrand, France*).

Calculation of lean body mass (LBM) from total body water (TBW) measurements assumes a known hydration coefficient for LBM. An increase in plasma volume (PV) is established during prolonged and repeated exercise and could be the consequence of either a fluid shift from intracellular and/or interstitial compartments or of TBW retention. In the latter case hydration of LBM would change. The aim of this study was to measure changes in body water compartments during a 7-day endurance raid and their consequences on LBM estimates.

Nine subjects (42.1 ± 7.8 year, mean \pm SD) engaged in a triathlon of 595 km and 13.100 m cumulative gain in altitude. PV (Evans Blue dye dilution), TBW (¹⁸O dilution) and extracellular water (ECW, Bromide dilution) were measured before (C) and after (R, day + 1) the raid. Daily changes in TBW (BIA, 100 kHz), ECW (BIA 5 kHz) and PV (from changes in haemoglobin and

hematocrit) were also assessed. Although the weights of the subjects remained stable, (68.4 ± 6.5 kg day 1, 68.1 ± 6.8 kg day 7), an inflation of all body water compartments was observed; between C and R, increases were $+22 \pm 11\%$ (PV, $P < 0.001$), $+4.1 \pm 2.0$ L (TBW, $P < 0.001$) and $+2.0 \pm 1.3$ L (ECW, $P < 0.001$). PV, TBW and ECW significantly increased from day 1 to day 4 then plateaued till day 7-8.

In conclusion, heavy sustained exercise induces a body water retention, in all compartments including intracellular water. If hydration of LBM had been kept constant, this would result in an increase of LBM by 5.7 kg and an equivalent loss in fat mass, which is energetically impossible. In circumstances prevailing in this study changes in body composition cannot be estimated from changes in TBW.

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Binding of anti lipoprotein lipase immunoglobulins to chylomicrons in autoimmune type I hyperlipidemia. V Pruneta¹, P Moulin¹, F Labrousse², P Bondon³, G Ponsin¹, F Berthezène² (¹ *Laboratoire de métabolisme des lipides*; ² *Service d'endocrinologie et des maladies de la nutrition*; ³ *Laboratoire de biochimie, Hôpital de l'Antiquaille, 69005 Lyon, France*).

Secondary hyperchylomicronemia are mostly induced by diabetes mellitus and/or environmental factors such as excess of alcohol or carbohydrate intake. We describe a rare case of secondary hyperchylomicronemia induced by an autoimmune disease in a 35-year-old woman who presented a severe and intermittent type I hypertriglyceridemia (TG: 2–60 mmol/L). Treatment by fresh plasma exchange, strict dietary therapy and administration of fibrates or *n*-3 fatty acids were unable to maintain a consistent remission. Because of an history of familial and