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Association of EE measurement and nutrient balance study in very low birth weight (VLBW) infants allows precise evaluation of different feeding regimen (nutrient utilization, weight gain composition). EE measurement can be performed with doubly labelled water (DLW) method, but little is known about NIA in oxygen 18 (O18) and deuterium (D2) and influence of its variations on precision of EE measurement with DLW method.

During nutritional balance studies, urine samples were collected each day during 5 days in 13 VLBW infants (post-natal age: 28.0 ± 4.4 days, gestational age: 32.5 ± 1.1 SA, body weight: $1\ 509 \pm 124$ g) fed human milk ($n = 5$) or pre-term formula ($n = 8$). NIA was measured ($n = 54$) with isotope ratio mass spectrometer (Optima®, Fisons). Then daily values of O18 and D2 were used for calculation of EE in the 13 subjects.

NIA was -3.13 ± 0.83 ‰ for O18 and -24.56 ± 3.63 ‰ for D2, which is close to the adults values [Ritz et al (1996), *Am J Physiol* 270, E164-E169]. The mean coefficient of variation of EE measurement in relation with NIA variations was $1.98 \pm 0.78\%$ (0.62 to 2.98%).

In conclusion, during nutrient-balance study in VLBW infants, the variations in NLA did not significantly influence precision of EE measurement by DLW method.

Metabolic effects of oral glucose in CAPD patients versus healthy subjects.

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Patients with end stage renal failure display an insulin-resistant state which is not reversed by continuous ambulatory peritoneal dialysis (CAPD). The insulin-resistance associated to chronic peritoneal glucose administration can induce chronic hyperinsulinaemia. In addition, these patients gain adiposity over the course of CAPD. The mechanism(s) sustaining this alteration of body composition is(are) not elucidated. Metabolic and oxidative responses to oral glucose were compared in six CAPD patients (68 ± 5 years) and six healthy subjects (HS) (24 ± 1 years) retrospectively selected after having ingested a similar oral glucose load per kg of fat free mass (FFM) (1.20 ± 0.3 g.kg FFM⁻¹ vs 1.20 ± 0.6 g.kg FFM⁻¹; CAPD vs HS). Body composition was determined from anthropometric measurements. Substrates oxidation was obtained over 6 h from indirect calorimetry. CAPD patients had similar BMI (21.4 ± 1.3 vs 22.9 ± 1.1 kg.m⁻²), a higher fat mass (25.8 ± 3.7 vs $16 \pm 2.2\%$; $P < 0.05$) and a lower FFM (42.2 ± 2.2 vs $56.5 \pm 2.6\%$; $P < 0.01$) than HS. CAPD patients displayed a higher glycemic and insulinaemic response to glucose than HS ($P < 0.05$). After adjustment for FFM, glucose oxidation was not different between the two groups ($P = 0.5$) while fat oxidation tended to be lower in CAPD patients than in HS ($P = 0.06$). Fat oxidation was related to fat mass in CAPD patients ($r^2 = 0.77$, $P < 0.05$) but not in HS ($r^2 = 0.05$). Basal plasma FFA were similar (405 ± 87 vs 483 ± 50 μM; CAPD vs HS). Following glucose, FFA concentrations were more inhibited in CAPD patients than in healthy subjects from 240 to 360 min; $P < 0.01$).

In conclusion, the marked adiposity of CAPD patients could result from an increased inhibition of fat oxidation secondary to hyperinsulinaemia which results from insulin-resistance. The increased adiposity was not sufficient to overwhelm the inhibiting effect of hyperinsulinaemia on fat oxidation.