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Tanita foot-to-foot bioelectrical impedance validated in healthy overweight adults
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Background – Bioelectrical impedance analysis (BIA) has been commonly used as a convenient, cost effective way to measure body composition in large population studies. However, the validity of this technique remains uncertain.

Objective – To compare measurements of body fat mass using single frequency BIA with dual-energy X-ray absorptiometry (DEXA).

Design – Forty-two overweight and obese (body mass index 25 to 40 kg/m²) but otherwise healthy volunteers aged 30 to 70 y were recruited from the general population. In a cross sectional analysis, fat mass was measured using foot-to-foot BIA (Tanita Scale Model TBF-300) and whole body DEXA (GE Lunar Prodigy scanner).

Outcomes – Although fat mass measured using BIA was strongly correlated with DEXA ($r^2=0.89$), this analysis is not useful when comparing methods of measurement. There was bias in the measurement of fat mass with BIA measuring lower than DEXA (mean ± SD: -2.96 ± 2.91 kg). In weighted least products regression there was a significant fixed bias (mean (95% CI): -6.24 (-10.75, -1.72). However, there was no significant proportional bias (1.09 (0.96, 1.23)). That is, the slope did not differ significantly from 1. This implies that the difference between the methods did not increase with increasing fat mass.

Conclusions – Although the results suggest that there may be some concern regarding accuracy of the BIA technique in overweight and obese individuals, this method may be useful for estimating of fat mass in large cross-sectional and longitudinal population studies, as well as in intervention studies.

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The effects of soy and whey dietary proteins on gene expression during tumourigenesis
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Background – Both soy and whey proteins have been shown to have additional health benefits beyond their basic nutritional value, including anti-carcinogenic properties against colorectal, breast and prostate cancers. At present, limited knowledge exists of the mechanisms by which soy and whey exhibit these anti-carcinogenic properties and whether anti-tumour properties extend to other tissues.

Objective – To determine the effects of soy and whey protein-based diets on the incidence and progression of N-nitrosodiethylamine (NDEA)-induced, pre-neoplastic lesions and gene expression in the liver.

Design – Pre-neoplastic lesions were induced in the livers of Wistar rats by NDEA injections (25mg/kg body weight, 2 times week for 3 weeks). Rats (9 per treatment) were fed control (meat-based rodent chow), whey-based or soy-based diets for 15 weeks. Following euthanasia, liver samples were obtained and the total area occupied by preneoplastic lesions was determined by immunohistochemical staining for GST-yp. DNA microarray analysis is being undertaken to investigate the effects of the diets upon gene expression.

Outcomes – The incidence of preneoplastic lesions in whey-fed rats (0.31% total liver area) was reduced by 41% compared to rats fed a control diet (0.53% total liver area; $P < 0.05$). Soy-fed rats showed an 81% increase in lesion incidence (0.98% total liver area; $P < 0.013$).

Conclusions – Whey-based diets protect against initiation and progression of NDEA-induced preneoplastic lesions in liver compared to either meat- or soy-based diets. A similar pattern of protection has been observed against colorectal tumours. The molecular mechanisms of this protection remain to be elucidated.