

Estimation of the dietary acid generating potential of the elderly British population: analysis of the National Diet and Nutrition Survey (NDNS) adults aged 65 years and over using estimates of net acid excretion indirect (NAE_{ind}) and net rate of endogenous non-carbonic acid production (NEAP).

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Dietary intake is known to influence acid-base balance in humans under tightly controlled research conditions, but characterisation of the net effect of food groups on acid loading in population groups is ill-defined. The aims of the present study were to; (i) quantify estimates of net acid excretion indirect (NAE_{ind}) and net endogenous non-carbonic acid production (NEAP) in a national representative group of British elderly aged 65 years and older, categorised into different age groups and between genders; (ii) compare and characterise NAE_{ind} and NEAP in relation to food groups likely to influence dietary acid/alkaline loading; (iii) to determine regional differences in estimates of dietary acidity/alkalinity. The National Diet and Nutrition Survey (NDNS) is an ongoing joint initiative established by the Ministry of Agriculture, Fisheries and Food (MAFF) and the Department of Health. The aim of the NDNS is to provide a comprehensive, cross-sectional representation of the dietary habits and nutritional status of the population of the UK. The NDNS dataset of the British elderly consisted of a 4-day weighed dietary record and a health and lifestyle questionnaire (Finch *et al.* 1998). NAE_{ind} and NEAP values were calculated using $\sum [(protein (SO_4^{2-}) + P + *EOA) - (Mg + K + Ca)]$ and protein:K ratio respectively (Remer *et al.* 2003; Frassetto *et al.* 1998). For the purposes of this study a total of 1687 subjects were examined.

Mean NAE_{ind} values (47.1[A1] (SD 10.4) and NEAP (47.0 (SD 10.7) were highly correlated ($r=0.723$, $p<0.001$), with both estimates being higher in men. NAE_{ind} and NEAP values increased significantly with increasing age ($P<0.05$), except in the 95–104 years group due to low numbers ($n=32$). Regional differences were found for intakes of NAE_{ind}, with higher mean intakes in Scotland/North region (48.8 (SD 10.2) compared with Central/South West region (46.7 (SD 10.4) and London/South-East region respectively (45.4 (SD 10.5) ($P<0.01$). Similar results were found for NEAP. NAE_{ind} and NEAP values were inversely associated with fruit and vegetable intakes, conversely protein, meat and fish intakes were directly associated with higher NAE_{ind} and NEAP.

These data provide an insight into the acid-generating potential of the diet in the British elderly and suggest that their diet is rich in dietary acid precursors, increasing with age and geographical location.

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*EOA was calculated using $41 \times \text{body surface area (m}^2\text{)}/1.73 \text{ (m}^2\text{)}$ (Remer *et al.* 2003). Units of NAE_{ind} (mEq/d) and NEAP (g/mEq/d).

References:

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