Validation of a food frequency questionnaire. II. Nutrients and biochemical markers. C Bonifacj [1], M Gerber [2], J Scali [2], C Astre [2], JP Daurès [1] *([1] Unité d'épidémiologie, de biostatistiques et de recherche clinique; [2] Groupe d'épidémiologie métabolique, IURC, 34000 Montpellier, France).*

Validation of the food frequency questionnaire was also conducted on nutrients to ensure comparison with other studies in the literature. The need for accurate measures of habitual diet in epidemiology has prompted numerous studies on diet assessment in various countries [Pietinen et al (1988), *Am J Epidemiol* 128, 655-666; Engle et al (1990), *Nutr Cancer* 13, 281-292; Liu et al (1992), *Epidemiology* 3, 496-502; Rimm et al (1992), *Am J Epidemiol,* 135, 1114-1126; Martin-Moreno et al (1993), *Int J Epidemiol* 22, 512-519; Bingham et al (1994), *Br J Nutr* 72, 619-643; Gnardellis et al (1995), *Epidemiology* 6, 74-77; Decarli et al (1996), *Ann Epidemiol* 6, 110-118]. However, dietary habits vary from country to country, but also from region to region, implying that for nutritional surveys conducted in a geographically and/or culturally distinct region, a specific questionnaire must be validated.

The same technics of dietary intake assessment as described in the abstract I were used, as well as the same statistical analysis. These technics have been completed by the use of biological markers, plasma β-carotene, and urinary nitrogen and potassium as described by Bingham et al (1995), *Br J Nutr* 73, 531-550).

The energy-adjusted Pearson correlation coefficients between PETRA and the 7-day record ranged from 0.32 for vitamin E to 0.81 for vitamin C (mean: 0.69 for the 23 nutrients). There was practically no misclassification. For FFQ, the de-attenuated energy-adjusted Pearson correlation ranged from 0.22 for proteins and monounsaturated fatty acids to 0.80 for iron (mean: 0.48). Misclassification occurred for 10% or less of the subjects (except for vitamin C, 12%). Correlation coefficients were high (> 0.5) and misclassification low (< 3%) when the range of nutrients was large and/or FFQ between-person variance high.

Partial and direct correlations between dietary and plasma nutrients were higher than those reported in the literature for the FFQ and comparable for the check list 7-day record (plasma β-carotene vs FFQ and 7-day record carotene intake, 0.31 and 0.44, respectively; urinary nitrogen vs FFQ and 7-day record protein intake 0.40 and 0.43, respectively; urinary potasium vs FFQ and 7-day record potassium intake, 0.20 and 0.41, respectively).

However, a correlation between measurements demonstrates validity only if it exists because each of the assessment actually measures the same thing and not because the errors are correlated. We computed also the correlations according to the statistical model described by Kaaks et al (1994), *Stat Med* 13, 127-142, using the three different intake assessment methods for which correlation of random errors are the least likely: FFQ, PETRA and the biological marker. For β-carotene, we showed a ρ value of 0.35 for FFQ, 0.50 for PETRA and 0.83 for the plasma β-carotene with the estimated true intake (method of the triade).

MEDHEA: a nutritional survey in Mediterranean countries. First results in département de l'Hérault, France. M Gerber, J Scali, MH Avallone, C Teisson *(Groupe d'épidémiologie métabolique, Inserm-CRLC, 34298 Montpellier cedex 5, France).*

The general objective of the Medhea study is to promote Mediterranean diet, considered as a model of healthy diet. The Mediterranean diet is increasingly cited in scientific circles as an example of healthy nutrition as far as cardiovascular illnesses