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DIET, INSULIN SECRETION AND INSULIN SENSITIVITY - THE DR'S EXTRA STUDY (ISRCTN45977199)

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Objectives:

Intakes of saturated fat (SFA) and dietary fibre, body mass and physical activity are all associated with the incidence of type 2 diabetes mellitus (T2DM). Their relative importance for maintenance of normal glucose mechanism is not fully known.

Methods:

In a population based sample of 1114 individuals, aged 58-78 years dietary intakes were assessed by 4-day food records and cardiorespiratory fitness as maximal oxygen uptake. Insulin secretion, insulin sensitivity, early phase (DI30) and total (DI120) disposition index were assessed based on an OGGT. Linear associations were modelled with linear regression. Combined effects were studied by introducing SFA and fibre intake, as well as cardiorespiratory fitness and BMI as dichotomized variables in general linear models.

Results:

Intakes of dietary fibre and whole grain bread were positively associated with peripheral insulin sensitivity, independent of physical fitness and BMI. The DI30 of subjects with low SFA intake and high fitness, despite their high BMI, did not differ from the DI30 of subjects with low BMI, low SFA intake and high fitness (159 vs. 187, $P > 0.05$), as did the DI30 of subjects with high BMI, high SFA intake and low fitness (141 vs. 187, $P < 0.05$).

Conclusions:

In conclusion, dietary fibre and a combination of low SFA intake and high fitness may contribute to maintain a normal glucose metabolism, independent of BMI.