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Stereospecific structures of fats and oils and their effects on metabolism in man. Heikki Kallio* & Päivi Laakso.

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Lingual lipase, pancreatic lipase, and carboxyl ester hydrolase are the enzymes responsible for the dietary fat digestion in adults. In infants, the human milk lipase is of special importance. Functions of the enzymes complete each other resulting in the digestion of dietary fats and oils to generate free fatty acids, mainly from *sn*-1 and *sn*-3 positions, and 2-monoacyl-*sn*-glycerols to be absorbed into enterocytes of the small intestine. The short and medium chain length fatty acids as well as the small amount of free glycerol will be absorbed directly into the portal vein.

Edible fats and oils consist of species specific combinations of triacylglycerols with characteristic stereospecific structures. Fatty acids esterified in the *sn*-2 position are of special nutritional importance according to many investigations concerning metabolism of natural, randomized and synthetic triacylglycerols. The *sn*-2 position has a 'memory effect' in the formation of chylomicrons and the very low density lipoproteins, affecting subsequent lipid metabolism in the vessels and liver.

Palmitic acid, one of the risk factors in atherogenesis, is predominantly esterified in the *sn*-2 position of triacylglycerols in human milk and lard, whereas in most vegetable oils palmitic acid is located in the *sn*-1 and *sn*-3 positions. In addition to the total fatty acid pool of food, stereoisomerism of triacylglycerols is evidently of significant physiological importance.

Analysis of the relative proportions of fatty acids in the three stereospecific positions in fats and oils by enzymatic and chromatographic analyses is common practice. However, more effective chromatographic and mass spectrometric methods have to be developed to identify single molecular species of triacylglycerols. Infant energy metabolism and cardiovascular diseases in adults are the two major incentives for further investigations.

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Carbohydrates in food tables. Geoffrey Hudson & Hans Englyst.

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Many food ingredients are common to national Western diets and food tables should supply meaningful, reliable data that are suitable for use by dieticians, epidemiologists and the food industry. Most of the current food table values for minerals, fats, proteins and vitamins meet these criteria adequately. However, values for carbohydrates in food tables represent a potential minefield, with ambiguities leading to anomalous calculations of the carbohydrate, fibre, starch and metabolisable energy content of foods.

Different countries have chosen methods that include different components and therefore yield different values for fibre. The material measured as 'fibre' by non-specific gravimetric procedures may be a mixture of NSP, starch and non-carbohydrate components in unspecified proportions that may vary as the result of food processing; such values are impossible to interpret in chemical terms and can not be used in energy calculations. To further the confusion, fibre is included as a carbohydrate for nutritional labelling in some countries, while in others it is listed separately. Like other values, dietary fibre must be based on the measurement of chemically identified components. We suggest that for the purpose of food tables and food labelling fibre should be defined as the endogenous (naturally occurring) plant cell-wall NSP and that dietary fibre is properly listed under carbohydrate (2). This would aid the consumer in choosing the unfortified high fibre diet recommended in the national dietary guidelines and would allow the calculation of the energy content of foods.

It is now recognised that the physiological effects of dietary starch is related to the site, rate and extent of its metabolism in the gut. We have developed *in vitro* methods (1) for the measurement of the fractions of starch likely to be digested rapidly (RDS), slowly (SDS) or incompletely (resistant starch, RS) in the human small intestine. We propose a further category of carbohydrates, rapidly available glucose (RAG), which is the sum of free glucose, glucose from sucrose and rapidly digestible starch (RDS). RAG values are expressed as g/100g of food as eaten and allow calculation, based on the ingredients of a meal, of the amount of glucose likely to be rapidly absorbed in the human small intestine. RAG values offer a guide to dietary control of the magnitude of the glycaemic response.

We believe that food table entries based on these lines would be beneficial to all concerned, including the food industry and the consumer.

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