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Title and subtitle FOOD FACTORS AFFECTING METABOLIC RESPONSES TO CEREAL PRODUCTS		
Abstract <p>Today it is established that starchy foods differ in effects on postprandial glucose and insulin responses. A rapid digestion and absorption results in a high increase in blood glucose and insulin values, while a reduced rate of starch uptake results in a lower and more prolonged increase. Accumulating data suggest that such a "lente" behaviour is beneficial from a nutritional point of view.</p> <p>This thesis focus on some food properties of importance for the metabolic response to starch in cereal products i.e. the food structure, amylose/amylopectin ratio, incomplete gelatinization, presence of viscous dietary fibre. The products studied were based on wheat (pasta, bread), barley ("rice extender", porridge), corn (bread) or oats (rolled oats, porridge), respectively. An invitro method, based on enzymic incubation of chewed products, was developed to study the mechanisms responsible for differences in metabolic behaviour.</p> <p>From studies in healthy subjects it is concluded that the postprandial blood glucose and insulin responses are greatly affected by food structure. Any process disrupting the structure of the ingredient material will increase the metabolic response. The glycemic and insulin responses were reduced by an intact botanical or physical structure or a high amylose content. Consequently, boiled intact cereal kernels, pasta products (varying widely in ingredients and processing conditions) and a high-amylose corn bread displayed "lente" features. The importance of naturally occurring levels of viscous cereal fiber is less clear. Whereas the fibre in a boiled barley flour porridge blunted glycemia, no effect was noted in case of rolled oats or oat porridge. Also, no impact of incomplete gelatinization in rolled oats was seen. Thus, both rolled oats and oat porridge gave high glucose and insulin responses similar to those with white wheat bread. The rate of starch digestion was identified as a key determinant of metabolic responses with most products and the in vitro method was shown to predict the glucose and insulin response with good accuracy for most of the products.</p>		
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Date 21/1 - 94