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Extended Abstract

Dimensional approaches to nutrition, food science and healthy life

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Current progression of bioscience is unimaginably getting faster, deeper and broader than ever. Relatively new fields, nutrigenetics, nutrigenomics, and nutritional epigenetics are examples of studies related to extended nutrition. Among them, nutritional epigenetics is directly link to the gene regulation by the food. The focus is how the molecules in food interact via metabolic systems with the molecules that attach to DNA and how to control gene expression in the body. This altered gene activity without changing the DNA sequence and leads to modifications that can be transmitted to daughter cells to carry to the offspring. Therefore, public health services come to attention in this field to shape up people's healthy life. One of the examples is polyphenols in green tea have a variety of health benefits in our life for protective diseases including cancer as well as curing inflammation in humans. The names of active compounds in green tea are eight cate chins (polyphenols), such as epicatechin, catechin, gllocatechin, epigallocatechin, epicatechin gallate, epigallocatechin gallate, gallocatechin gallate and catechin gallate. These slightly different chemical structures and their metabolic pathways are complicated in the body. However, all catechins together in green tea seem to work at the synergetic maximum benefits rather than one of those catechins alone in the body. Administered individual catechins are absorbed and reach the several organs and tissues, then alter the metabolisms in their own ways; break down or restructure there; in some case affected by gut microbiome, to work preferably beneficial to keep up healthy state in the body.

Nutritional genomics studies the interaction between nutrition and the genome, and it seeks "to provide the scientific basis for improved public health through dietary means" (Bergmann et al. 2008, p. 448). As an emerging application of nutritional genomics, personalized nutrition encompasses the vision to improve individual health control by offering access to an improved understanding of "the functional interaction between bioactive food components with the genome at the molecular, cellular, and systemic level in order to understand the role of nutrients in gene expression and...how diet can be used to prevent or treat disease" (Castleet al. 2007, p. 3). Consequently, in the context of personalized nutrition, food may be understood as a tool for good health. This implies an instrumental relationship between food and health, where food is ascribed a secondary value and health appears to be a descriptive biological concept. However, food plays a more significant role in human life; food is connected to social contexts, cultural values, and identities. Likewise, health is not necessarily a descriptive concept; it may be seen as instrumental in relation to individual life plans—a perspective that turns health into a more complex, value-laden concept. This article introduces cultural understandings of food and health. The wider definition of food and health is explored in relation to the commonly used scientific approach that tends to take a more reductionist approach to food and health. The different discourses on food and health are being discussed in relation to ethical aspects of personalized nutrition, leading to the following questions: What kind of ethical challenges may be identified for personalized nutrition in relation to concepts of food and health, which include cultural and value-laden aspects? And how are social and cultural concepts of food and holistic concepts of health related to the aim of individualization in personalized nutrition?

The emergence and development of the life sciences has brought about changes in our understanding of nature and thus also of food. The significant contribution of the life sciences to increased living standards and a safer appraisal of food in the Western world have been accompanied, though, by an intellectualization of our relationship to food (Coff 2006, p. 61). Knowledge gained through the life sciences influences individual and cultural approaches to food and contributes to an increased intellectual and rational attitude toward food. For instance, information on labels of processed food packages has during the past decennia become more detailed and more explicitly related to health effects. The consumer is in the grocery shop confronted with information on different labels, some indicating health effects. Food consumption and the choice of food products are thus affected not just by personal taste, availability, and cultural traditions, but also by life science knowledge available on labels. Technological developments within food production, such as the development of novel foods, may be contrasted to cultural, social, ethical, and sensual relationships to food. The rational attitude is practiced in many ways, among others through scientific mapping and analysis of chemical substances in food targeted at understanding and improving human health.

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