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Nutritional Genomics' Contributions to Medication Development

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Introduction

The global population, academics, nutritionists, and healthcare professionals have all become more interested in learning about healthy/adequate diet during the past few decades. Humans have long used food and plants as remedies since they have understood that environment and diet may affect a person's health. With the development of science, particularly with the completion of the Human Genome Project (HGP), researchers began to wonder whether the interaction of genes with bioactive substances found in food could have a beneficial or negative impact on a person's health. Nutrigenomics was coined to describe the study of this interplay between genes and nutrition. In order to find and understand the current reciprocal interactions between genes and nutrients, nutrigenomics uses biochemistry, physiology, nutrition, genomics, proteomics, metabolomics, transcriptomics, and epigenomics.

The circle is meant to be squared by individualised medicine, healthy ageing, and individual lifestyle choices. Disability-free survival is intended to last until a person's abrupt death rather than a gradual decline in health as they age. Uncertainty surrounds the best ways to achieve disability-free survival, including whether to just accept one's fate by living or to get a genetic test and take the necessary precautions. There are numerous instances of older athletes continuing to compete at the top levels, occasionally defying expectations like "they would never come back." It has been demonstrated that it is possible to play tennis in the top 10 even at almost 40 years old and ice hockey in the top leagues until one is over 40 years old.

Description

A properly calibrated adaptation of dietary habits to an individual's metabolism may be necessary for healthy ageing. In addition to diet, physical activity is encouraged to preserve both an individual's and the population's health. However, universal approaches like the "eat the rainbow" adage or the Swiss Food Pyramid do not take into account individualised nutritional therapy. Daily allowances that are advised, like the DACH recommendations, are based on epidemiological information derived from the requirement of clearly defined, small, healthy population groups. These general requirements are adjusted by two standard deviations and additional amounts to make up for losses from poor nutrient accessibility in food or during processing. Additionally, certain physiological circumstances like pregnancy justify an additional supplement. For this reason, from the perspective of nutritional medicine, recommended daily amounts are imprecise [1].

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If foods or medications are equivalent to physiological substrates, they will either be easily absorbed or digested for removal as xenobiotics. The sequential kinetic steps Liberation, Absorption, Distribution, Metabolism, and Excretion as well as the dynamic steps at the target/receptor shown in the Ariens Scheme qualitatively describe the processes of xenobiotic passage across the intestinal wall, the body compartments, and organs until receptors are found. Since 400 BC, when Hippocrates theorised that the warm body temperature was innate, there has been nutritional research. The so-called "analytical Chemistry Era" started around 1700 AD. Lavoisier made his discoveries about how the body processed food to produce energy, carbon dioxide, and water at this time. Liebig discovered lipids, proteins, carbohydrates, and other macronutrients as releasing heat in the 19th century. Antonie Lavoisier made significant findings on food metabolism and their relationship with energy generation, including its importance on respiration and oxidation, during the 18th and 20th centuries, which is known as the "Chemical and Analytical Era of Nutrition" [2].

It is necessary to use genetic techniques to deal with variability in these processes. SNMs (single nucleotide mutations) cause genotype diversity and consequently varied metabolic capabilities, which are observed as polymorphisms in a population. Adverse medication reactions frequently have polymorphisms as the cause, and these incidents rise when there is polypharmacy. The likelihood of an interaction between two medications is 13%, four drugs are 38%, and seven drugs are 82%. Medications are given to inpatients. Therefore, pharmacokinetic factors are essential. Although they appear to occur even more frequently than drug-drug interactions, there is no estimate for the frequency of food-food and food-drug interactions. The lesser severity of incidents could be one of the causes. One can assume that there is a higher likelihood of food, nutrient, and drug interactions [3].

Genetic influences slowly vanish due to genetic recombination and/or adaptation as a result of evolution, globalisation, and internationalisation of eating patterns. Epidemiologic analyses are becoming increasingly challenging to interpret because, at least in Western nations, mixed populations result in genetic code recombination. If not, genes not only determine how food is metabolised, but food also acts the other way around, putting pressure on long-term genetic and medium-term epigenetic adaption. This is because the food we eat today is not only produced in the consumers' region, but is rather of international provenance and contains new ingredients and components. This will result in unique individual-level therapies and new diagnostic tools like genetic profiling. The entire collection of active RNA transcripts is studied through transcriptomics. Gene expression varies depending on the various situations and times of day because the mRNAs are created at a certain time and in a specific tissue of a chosen organism. When activated, transcription factors go to the nucleus where they bind to a specific DNA sequence in the promoter region of genes and begin to either facilitate or hinder transcription. The physiological signals that are activated by nutrients/bioactive food molecules or the metabolites produced by them, as well as hormones, pharmaceutical therapies, and illnesses, among others, can activate these transcription factors. They serve as sensors, controlling or altering cellular transcription as necessary [4].

Depending on the amount of extra steam and heat used during processing, the amounts and patterns of flavonoid degradation vary. As Italian sugo, for example, retains more lutein, beta-carotene, and lycopene than steamed tomatoes, tomato components appear to be steam-volatile. Only 3% of the anthocyanidins in blueberries are still present after making blueberry jam due

to prolonged heating operations. By gently roasting, valuable Mungo sprouts components *(genistein, daidzein)* are fairly well preserved. When green tea is extracted at higher temperatures, it loses more bioactive substance than when it is macerated in 80°C water for 3 minutes [5].

Conclusion

In order to keep an organism's homeostasis, nutrition is the process by which it provides it with various substances that can serve as an energy source (carbohydrate and fat), a supply of proteins for cell construction, and a regulator of metabolism (vitamins and minerals). An individual's nutritional status is the consequence of the interaction of a number of variables, including genetic make-up, physical constitution, and emotional and social state. Since minerals and other bioactive components in food can either be beneficial or cause a number of diseases, diet is a crucial determinant. NTCDs, such as cancer, diabetes, and dislipidemies, as well as phenylketonuria and celiac disease are among the conditions linked to food consumption.

References

1. Ahmed, Serge H. "Individual decision-making in the causal pathway to addiction: Contributions and limitations of rodent models." *Pharm Bioch Behav* 164 (2018): 22-31.
2. Altshuler, Harold L. "Alteration of ethanol self-administration by naltrexone." *Life Sci* 26 (1980): 679-688.
3. Anastasio, Noelle C. "Suppression of cocaine relapse-like behaviors upon pimavanserin and lorcaserin co-administration." *Neuropharmacology* 168 (2020): 108009.
4. Barrett, Andrew C. "Effects of dopamine indirect agonists and selective D1-like and D2-like agonists and antagonists on cocaine self-administration and food maintained responding in rats." *Neuropharmacology* 47 (2004): 256-273.
5. Bergman, Jack. "Medications for stimulant abuse: Agonist-based strategies and preclinical evaluation of the mixed-action D- partial agonist aripiprazole (Abilify®)." *Exp Clin Psychop* 16 (2008): 475.

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