

Nutrigenomics: Effect of Food on Gene Expression

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INTRODUCTION

Nutrigenomics is the study of the effect of food and food constituents on gene expression, and the way genetic variations have an effect on the organic environment. It focuses on understanding the interaction between nutrients and alternative dietary bioactives with the genome at the molecular level, to grasp however specific nutrients or dietary regimes might have an effect on human health. It's the study of the implications of the influence of nutrients and alternative bioactive food elements on the expression of the genetic material. It'll identify the genes concerned in physiological responses to diet and also the genes during which tiny changes, referred to as polymorphisms and also the influence of environmental factors on gene expression.

Definition

It is the interface between the organic process setting and cellular or genetic processes. Nutrigenomics may be a branch of nutritional genomics and is that the study of the results of foods and food constituents on gene expression.

NUTRIGENETICS

Nutrigenetics identifies however the genetic frame of a specific individual co-ordinates his or her response to varied dietary nutrients. It additionally reveals why and how people respond to identical nutrient.

Four causes of nutrigenomics are:

- Improper diets are unit risk factors for disease.
- Dietary chemicals alter gene expression and/or modification genome structure.
- The degree to that diet influences the balance between healthy and disease states might depend upon an individual's genetic makeup.
- Some diet-regulated genes are likely to play a job within the onset, incidence, progression, and/or severity of chronic diseases.

HOW WILL DIET AFFECT OUR GENE EXPRESSION?

Genes express themselves through proteins. Enzymes are unit special proteins designed to get things started. Our genome instructs ribosomes to supply several enzymes that destroy toxins. Some foods like cauliflower, broccoli and brussels sprout contain chemicals that really tell our gene to direct biogenesis of those enzymes. In some individual genes provide unclear directions for creating an enzyme that metabolizes the aminoalkanoic acid, phenylalanine. As a result this amino acid builds up, thereby causing brain damage. A diet limiting this amino acid can stop the damage if detected in early infancy.

Gene diet disease interaction

Modifying the dietary intake will prevent some monogenetic diseases e.g., in phenylketonuria (PKU) food containing the aminoalkanoic acid phenylalanine, as well as high macromolecule food like fish, chicken, eggs, milk, cheese, dried beans and nuts should be avoided. Just in case of defective aldehyde dehydrogenase enzyme, alcohol should be avoided. Patients having galactosemia (lack of a liver enzyme to digest galactose) should avoid diets that contain lactose or galactose, as well as milk and milk product.

ADVANTAGES AND DISADVANTAGES

- Increased concentrate on a healthy diet and manner
- Increased awareness of risk of assured conditions
- Focus on inhibition of diseases
- Decreased morbidity and premature mortality
- Reduced health care prices
- Better understanding of the mechanisms involved in disease condition

Disadvantages of Nutrigenomics are attention is removed from other modifiable risk factors, focus only specific nutrients and foods and increased prices related to personalised diets and designer foods.

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GOAL OF NUTRIGENOMICS

Use of personalised diets to stop or delay the onset of disease and optimize and maintain human health. Results of

nutrigenetics/nutrigenomics studies might facilitate to switch diets to avoid or include certain nutrients and food combinations during more personalised way than the common state of knowledge of the ordinary consumer currently allows.