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Recent advances in nutritional sciences: An overview of glycans and miRNAs

There are many nutritional substances that humans consume on a daily basis: water, carbohydrates lipids and proteins are main biochemical components of food. Others in a smaller amount are vitamins minerals and enzymes. At a possibly lesser quantity are glycans and miRNAs. The presence of oligoglycans in all food sources is an established fact for many years. These special carbohydrates are present as glycoconjugates (glycoproteins or glycolipids) in and on the surface of all the cells (glycocalyx) of all organisms that we eat and remain intact through the GI tract as we lack the enzymatic repertoire of the human body to unbind their particular β -linkages. Glycans bind to naturally present human lectins (through protein-carbohydrate interactions), but also with other human glycans (through carbohydrate-carbohydrate interactions, or CCI). Moreover, these glycans like fibres, are digested by the gut microbiota that resides within the intestine. As our biochemistry shapes the composition of the microbiome, so does the composition of glycans and foods that we consume, triggering biological responses. miRNAs are small, single-stranded, 19 to 23 nucleotide long RNA molecules and affect the stability of messenger RNA (mRNA) influencing protein synthesis. miRNAs are also present in foods and act on both the microbial composition in our gut and may be absorbed by the walls of the GI tract, demonstrating resistance to food processing and enzymatic attack. Though still a topic of controversy these small, noncoding RNAs that control gene expression may directly enter into the circulating miRNAs in food one side, microbiota composition on the other and the resultant health status of the host (immune system) on the third side.

Recent Publications

1. Menapace M (2018) Scientific ethics: a new approach. Science and Engineering Ethics. Doi:10.1007/s11948-018-0050-4.

Biography

Marcello Menapace completed his first master's Degree in Chemistry at the University of Milan (Italy); second master's Degree in Business Administration (MBA) at the London School of Business and Finance in London (UK) and his PhD in Life Science at the H S University in Philadelphia, USA. He is a Researcher, Philosopher, Scientist, Medical Writer and Professional Regulatory Consultant. He has worked in the pharmaceutical industry for over 15 years as a Lead Consultant and Research Scientist for various biotech companies and is a Member of the professional organization TOPRA. He is the Director of M&Ms Consulting Ltd., a high-end consultancy service organization. He has published one scientific paper on Science and Ethics and is an Honourable Speaker at the European Congress of Applied Science and is currently collaborating with biotech companies to publish other biological and chemical research manuscripts.

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