Modulation of the gut microbiota with polyphenols in the nutraceuticals Deniplant

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Hippocrates has been cited as saying "death sits in the bowels" and "bad digestion is the root of all evil" in around 400 B.C., suggesting the important role of the human intestine in health and disease.

The relationship between the intestinal chronic inflammatory syndromes and intestinal microbiota is strongly associated with a dysfunction of the immune system and the production of various pro-inflammatory cytokines

The distal gut is considered as a "microbial organ" or a "bioreactor" due to the vast amount of microorganisms residing in the gut, which are collectively termed as microbiota.

The human gastrointestinal tract is inhabited by a vast number of microorganisms that are called as the microbiota.

Polyphenols are secondary metabolites found abundantly in a wide variety of foods, such as fruits, vegetables, herbs, seeds and cereals, and in beverages, such as coffee, tea, cocoa and wine.

Polyphenols are the most abundant antioxidants in the human diet.

These compounds can modulate the composition of the gut microbiota exerting prebiotic mechanisms.

Polyphenols are naturally-occurring compounds found in plants. Many of these plants make up our food supply, including fruits, vegetables, coffee, tea, and wine.

Since a large proportion of polyphenols remains unabsorbed along the gastrointestinal tract, they may accumulate in the large intestine, where most of them are extensively metabolized by the intestinal microbiota.

Because the gastrointestinal tract is the first organ exposed to components of the diet, local and systemic health could be affected significantly depending on the diet's ability to influence the integrity, functionality, and composition of the complex gut microbial ecosystem.

Diet can be considered as one of the pivotal factors in modulating the functionality, integrity, and composition of the gut microbiota as the gastrointestinal tract is the first organ exposed to components of the diet.

The term 'nutraceutical' was coined from 'nutrition' and 'pharmaceutical' in 1989 by DeFelice and was originally defined as 'a food (or part of the food) that provides medical or health benefits, including the prevention and/or treatment of a disease'.

In this regard, the objective of this review is to provide an assessment of the reciprocal interactions of gut microbiota and dietary polyphenols and their implications on human health.

In this review, we have focused on the effects of polyphenols, key compounds of a healthy diet with several biological activities, on the gut microbial composition, their biotransformation by the gut microbiota, and the effect of their reciprocal interactions in human health and disease.

The two-way relationship "polyphenols↔ microbiota" are still poorly understood.

The gut microbiota plays a significant role in health and disease in humans.

This review focuses on the reciprocal interactions between the gut microbiota and polyphenols, the mechanisms of action and the consequences of these interactions on human health.

The use of polyphenols (resveratrol) in the nutraceuticals Deniplant may be of interest in modulating the gut microbiota.

This presentation focuses on the modulation of the gut microbiota by polyphenols in the nutraceuticals Deniplant.

This paper summarizes data on the influence of dietary polyphenols on gut microbiota and the main interactions between dietary polyphenols and beneficial and pathogenic intestinal bacteria.

Polyphenols can act on immune cells through the disruption of T cell differentiation, a limitation of dendritic cells maturation, or inhibition of macrophages, and subsequently, their ability to produce pro-inflammatory cytokines.

Another potential role of polyphenol in this adaptive immune response in the gut could be their action on the Treg cells that act a critical part in retaining immune tolerance and suppressing autoimmunity.

The polyphenols change the composition of the gut bacteria, and the gut bacteria are responsible for metabolizing the polyphenols into their bioactive metabolites.

Dietary polyphenols are a group of bioactive phytochemicals largely found in a wide variety of fruit, vegetables, seeds, herbs, and beverages (beer, wine, fruit juice, coffee, tea, and chocolate), and to a lesser extent dry legumes and cereal

Tea is possibly the most researched out of all the high-polyphenol foods, with many studies proving the prebiotic effects of tea extracts, leaves and polyphenol compounds.

Once ingested, polyphenols are recognized by the human body as xenobiotics, and their bioavailability is therefore relatively low in comparison to micro and macronutrients.

Eating polyphenol-rich foods on a regular basis, along with probiotics, prebiotics, and resistant starch will balance your microbiotia and get you on your way to good gut health!

The gut microbiota play a key role in modulating the production, bioavailability and, thus, the biological activities of phenolic metabolites, particularly after the intake of food containing high-molecular-weight polyphenols.

In addition, evidence is emerging on the activity of dietary polyphenols on the modulation of the colonic microbial population composition or activity.

The gut microbiota is a key factor in mediating the physiological functions of dietary polyphenols.

Not only do polyphenols increase counts of beneficial bacteria, they also inhibit growth of potentially pathogenic bacteria.

Polyphenols may act as promoting factors of growth, proliferation, or survival for beneficial gut bacteria.

We obtained polyphenols from fermented grapes for a long time of 4-6 months, in the wine obtained. Polyphenols may also be present in ground grape seeds

The effects of dietary polyphenols on the modulation of the intestinal ecology and on the growth of gut microbial species are still poorly understood.

Conclusion

Polyphenols interact bidirectionally with the gut microbiota. Dietary polyphenols are substrates for colonic microbiota.

They and their metabolites contribute to the maintenance of gastrointestinal health by interacting with epithelial cells, and largely by modulating the gut microbial composition.

Polyphenols in black grapes are known to be active ingredients in nutraceuticals obtained from fruits or plants.

The final health effects of dietary polyphenols depend on the composition of the gut microbiota.

Indeed, polyphenols can increase beneficial strains by reducing the number of pathogens.

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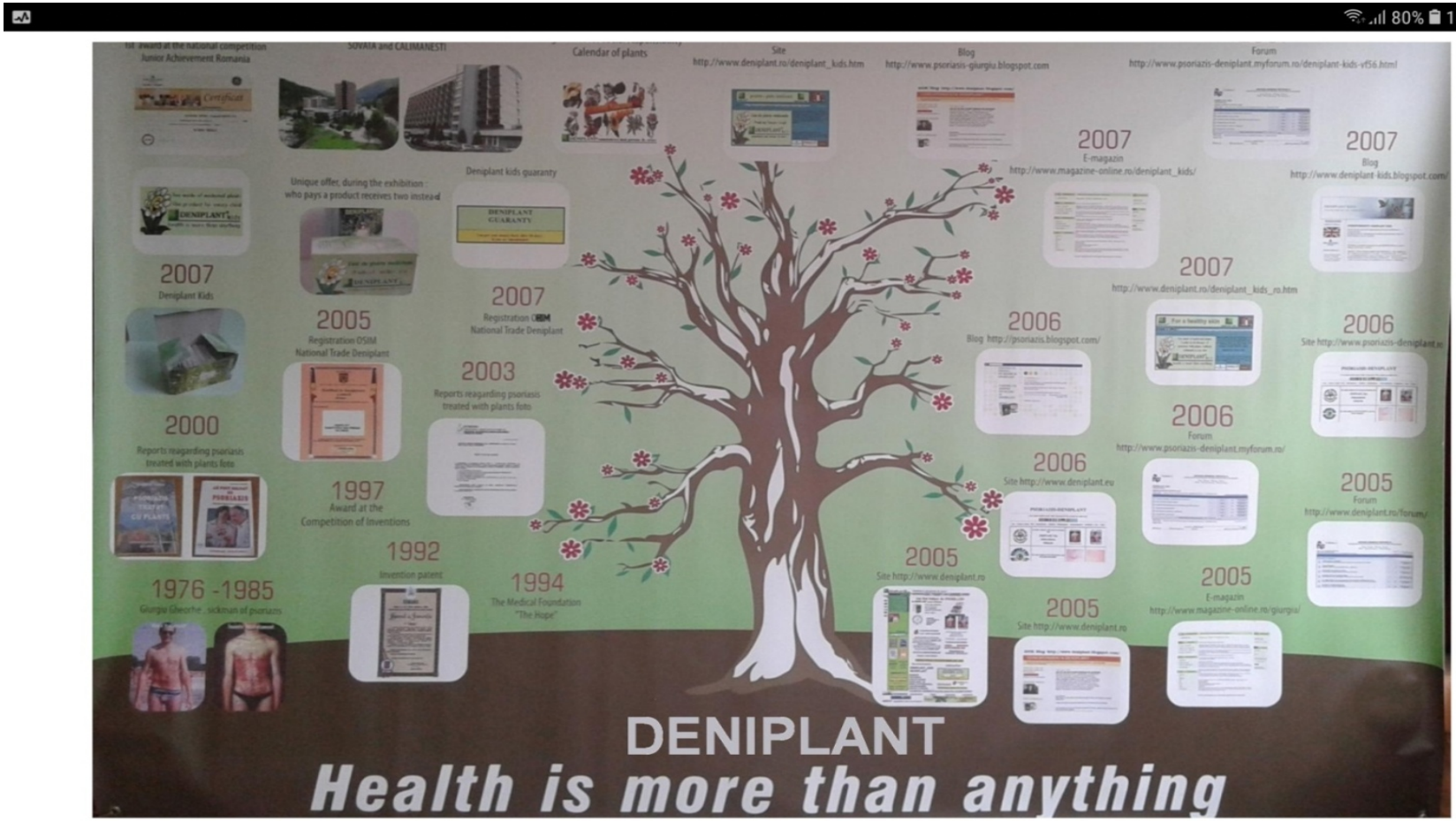

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