

## Forum Editorial

# Nutritional Proanthocyanidins, Flavonoids, and Related Phenols

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INTEREST IN DIETARY PHYTOCHEMICALS and components of medicinal plants for the maintenance of health and possible therapeutic intervention has increased markedly over recent years. Among these natural products, many polyphenolic compounds such as (epi)catechin and its derivatives, the oligomeric procyanidins, as well as phenolic stilbenes such as resveratrol, have captured considerable attention due to their biological, medicinal, and therapeutic potential.

The objective of this Forum issue on *Nutritional Proanthocyanidins, Flavonoids and Related Phenols* is to summarize current research on bioavailability, mechanisms of cytoprotection, and detection of polyphenols, as well as indications and benefits. However, there are still several unanswered questions. Major issues with respect to the protective effects of the polyphenols concern factors influencing their mechanisms of absorption across the small intestine, their biotransformation, and the bioactivity and mechanisms of action of their *in vivo* conjugates and metabolites. In particular, is it likely that such components function as antioxidants *in vivo*, or by biochemical mechanisms independent of their antioxidant properties?

This issue is a compilation of reviews and original research articles by leading researchers

in the field. Spencer *et al.* provide an overview of the absorption of flavonoids and proanthocyanidins across the small intestine and the nature of the resulting conjugates and metabolites (7). The review by Bhat *et al.* summarizes the biological properties of resveratrol, focusing specifically on its anticancer and estrogenic activities, leading to a fuller appreciation of potential health benefits (1). The effects of phenolic components of tea, catechins, theaflavins, and other flavonoids, on growth factors, nuclear factor- $\kappa$ B, and stress-mediated signal transduction, with special emphasis on their bioavailability, are highlighted in the review by Wiseman *et al.* (8).

The original research article by Bors *et al.* addresses the efficacy of natural polyphenols as antioxidants using pulse radiolysis, EPR, and NMR spectroscopy (2). Transportation and absorption of proanthocyanidin dimers, trimers, and polymers across monolayers of human epithelial intestinal cells are assessed in the research contribution of Déprez *et al.* (3). Määtä *et al.* discuss the antioxidant properties and biological efficacy of anthocyanins in berries and proanthocyanidins in black, red, green, and white currants (5). The role of resveratrol in the inhibition of the proliferation of breast cancer cells is discussed by Serrero and Lu (6). Kilmartin's contribution describes the novel elec-

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trochemical detection of natural antioxidants by cyclic voltammetry and HPLC (4).

We hope that this forum issue will stimulate interest and provide mechanistic information on natural polyphenols leading to the promotion of new research activity.

## ABBREVIATIONS

EPR, electron paramagnetic resonance; HPLC, high performance liquid chromatography; NMR, nuclear magnetic resonance.

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