Current progress on structure analysis and health benefits of persimmon tannin

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Abstract

Persimmon (*Diospyros kaki* Thunb.), characterized by its high proanthocyanidin (condensed tannin) content, is a widely consumed fruit in China, Japan and Korea. Persimmon proanthocyanidin has been connected with various health benefits, including antioxidant activity, anti-inflammatory activity, hypolipidemic activity, enzyme inhibiting, detoxification effects on snake venom and dispelling the effects of alcohol, etc. The biological activities of persimmon tannin are probably a consequence of its chemical structure such as the monomeric flavan-3-ol units, the types of interflavan bonds and the degree of polymerization. Although many researchers have focused their works on the structural analysis of persimmon proanthocyanidin, only a partial structural characterization has been achieved for persimmon proanthocyanidin due to the technical difficulties in high molecular weight condensed tannin composition analysis. And the detailed mechanism of the health benefits of persimmon proanthocyanidin in vivo is not fully understood. The analytical methods for characterizing polyphenols in persimmons were critically reviewed in order to evaluate the overall significance of literature results; the health benefits including the antioxidant activity, anti-inflammatory activity, hypolipidemic activity and other activities of both astringent and non-astringent cultivars, as well as the possible mechanism were also overviewed. In addition to summarizing recent progress of work on persimmon structure and health benefits, this paper also suggests new avenues for future research, and highlights the unanswered questions.