Abstract

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This work is focusing on summarizing available information about the fate of flavanols in the organism. It is necessary to know the pharmacokinetics to explain their biological effects. In contrast to other flavonoids, they occur in the form of aglycones in plant foods. Galoylation, polymerization and optical isomerism have an important influence on the pharmacokinetics. Partial absorption of monomers begins in the small intestine after oral ingestion. In addition to the liver, the extensive metabolic changes take place even in the enterocytes. The resulting metabolites enter the circulation or they are effluxed back into the intestinal lumen, especially in the case of (epi)catechin sulfates. Epicatechin and catechin are present almost exclusively as glucuronides, sulfates or methylated compounds in the plasma. On the contrary, free unconjugated forms prevail within the gallates. The extent of their absorption is lower. They are excreted via biliary excretion, while other catechins are quickly eliminated by the kidneys in urine. The bioavailability of the parent substances is low due to many factors. Intestinal bacteria play a key role in metabolism of compounds that pass to the large intestine. The cleavage of the ring to γ-valerolactones and other phenolic compounds by bacterial enzymes occurs there. The ring-fission metabolites could be more easily absorbed. Then they are also conjugated and excreted urinary. The absorption decreases with increasing degree of polymerization. The resistance against bacterial breakdown increases simultaneously. There is probably no depolymerization of proanthocyanidins to flavanol monomers that could be available for absorption.

Nowadays, many research groups are focused on positive effects of flavanols on human health. These compiled data could be used as a basis of the following research.