

DIETARY POLYPHENOLS FROM BERRY FRUITS: METABOLISM AND HEALTH

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Epidemiological data suggest an inverse relationship between consumption of a phytochemical rich diet that includes berry fruits and the incidence of chronic human illnesses such as cancer, inflammation and neurodegenerative diseases. Berry fruits contain high levels and a diverse range of phytochemicals including polyphenols. Polyphenols are known to have potent *in vitro* bioactivities but the fate and bioactivities of these native compounds and their metabolites in the human body may not necessarily correlate with their observed *in vitro* effects. Hence studies on the safety, toxicity, absorption, distribution, metabolism, and biological activities of polyphenols and their metabolites using *in vivo* models are necessary. Our studies in humans and animals have shown that dietary polyphenols, which include berry ellagitannins, proanthocyanidins, anthocyanins and other flavanoids are poorly absorbed but highly metabolized and bioavailable in biological fluids. Using highly sensitive analytical methods viz. HPLC-UV, HPLC-ECD, HPLC-MS/MS and GC-MS, we have shown that these polyphenols and their metabolites and conjugates are detectable in human and animal tissue, plasma and urine samples. Future studies should be designed to further investigate the biological effects of polyphenols and their metabolites *in vivo*.