

Effects of Some Soybean Flavonoids and Aglycone-rich Extracts in Nitric Oxide Homeostasis

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Flavonoids are a group of naturally occurring compounds that have been subject of considerable therapeutic interest. They are well known as efficient scavengers of oxygen radicals, but information about the effect of flavonoids on nitric oxide (NO) homeostasis is scarce. NO produced in the digestive system has been associated with the regulation of mucosal blood flow, gastric motility and mucus formation. The main objective of this study was to analyze the effect of some soybean isolated flavonoids and aglycone-enriched extracts on the acidic nitrite-reduction. NO scavenging potential of soybean extracts, at physiological pH, was also analyzed. NO formation from nitrite was analyzed with a nitric oxide chemiluminescence detector in the absence and presence of some soybean flavonoids and aglycone-rich extracts. Nitrite was injected into a home-built chamber apparatus which contained a 5-ml final volume of 0.1 M KCl/HCl solution. The rate of NO production was dependent on nitrite concentration and pH, at pH 3.5 NO production was 4 times lower than at pH 2.0. NO formation at pH 2.0 was stimulated by soybean aglycone-enriched extracts from embryo (4 fold) and cotyledon (2.5 fold) tissues. Quercetin and luteolin increased nitrite reduction 10 and 2.5 fold, respectively. Electrochemical determination of NO scavenging activity at pH 7.0 showed that embryo extract was more effective in accelerate NO decay (0.71 μ mol/min) compared to cotyledon (0.35 μ mol/min) or quercetin (0.18 μ mol/min). These results suggest that the effects of soybean flavonoids on human health could also be related to their property in interfering in NO homeostasis.

Keywords: nitric oxide, scavenger, flavonoids, nitrite-reduction.

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