

Letter to the Editor



Increasing the solubility of the nutraceutical curcumin by heat and inhibition of oxidative modification

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Several authors, in a special issue on curcumin "Curcumin: A Promising Spice for Therapeutics", describe decreased bioavailability of curcumin [1–3]. The solution to this problem would be to increase the solubility of curcumin before oral administration. Combined administration of piperine with curcumin has been shown to increase the bioavailability of curcumin [1, 3]. Our data show that the solubility of curcumin can be increased 12-fold and that of turmeric by 3-fold by heating a solution of curcumin or turmeric in

water to boiling for 10 min [4]. MALDI-TOF mass spectrometric and spectrophotometric profiling (400–700 nm) of the heat-extracted curcumin/turmeric shows no molecular disintegration as a consequence of heat. In an enzyme-linked immunosorbent assay that employed 4-hydroxy-2-nonenal (HNE) modification of solid-phase antigen, it was found that the heat-solubilized curcumin/turmeric inhibited HNE-protein modification by 80% [4, 5]. We have also reported significant inhibition of HNE-protein modification using curcumin solubilized with mild alkali [6].

Inhibition of HNE modification may thus be a mechanism by which curcumin exerts its therapeutic effect. Since curcumin's bioavailability is greatly limited owing to its extremely limited water-solubility, heat-solubilized curcumin should be considered in studies that involve curcumin.

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