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Heat-Solubilized Curcumin Should Be Considered in ClinicalTrials for Increasing Bioavailability

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To the Editor: The recent article by Dhillon et al. (1) is of great interest to those working with curcumin. As the investigators suggest, the usefulness of curcumin could be minimized because of its poor oral bioavailability (2). Data from this study show that only 22 to 41 ng/mL were detectable in plasma even when 8 g curcumin/day was given orally (1). Curcumin levels in the microgram range have been shown to be necessary to show antiproliferative effects in *in vitro* studies (3).

The solution to this problem would be to increase the solubility of curcumin before oral administration to patients. We have shown that we could increase the solubility of curcumin 12-fold by heating a solution of curcumin in water to boiling for 10 minutes (4). Matrix-assisted laser desorption ionization mass spectrometric and spectrophotometric profiling (400–700 nm) of the heat-extracted curcumin displays no heat-mediated disintegration of curcumin. With the use of an ELISA that used 4-hydroxy-2-nonenal modification of solid-phase antigen, the heat-solubilized curcumin was found to inhibit 4-hydroxy-2-nonenal-protein modification by 80% (5). We showed that mild alkali-solubilized curcumin also inhibited 4-hydroxy-2-nonenal protein modification significantly (6). Thus, inhibition of 4-hydroxy-2-nonenal modification of proteins may be a mechanism by which curcumin exerts its effect in many disorders (4,5).

As the full pharmacologic potential of curcumin is limited because of its extremely limited water solubility, heat-solubilized curcumin should be considered in clinical trials involving curcumin.

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Disclosure of Potential Conflicts of Interest
No potential conflicts of interest were disclosed.

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