Heat-Solubilized Curcumin Should Be Considered in Clinical Trials for Increasing Bioavailability

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.

Biji T. Kurien
R. Hal Scofield
Arthritis and Immunology Program,
Oklahoma Medical Research Foundation,
Oklahoma City, Oklahoma

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

References

©2009 American Association for Cancer Research. doi:10.1158/1078-0432.CCR-08-1957
Heat-Solubilized Curcumin Should Be Considered in Clinical Trials for Increasing Bioavailability

Biji T. Kurien and R. Hal Scofield


Updated version
Access the most recent version of this article at:
http://clincancerres.aacrjournals.org/content/15/2/747.1

Cited articles
This article cites 6 articles, 1 of which you can access for free at:
http://clincancerres.aacrjournals.org/content/15/2/747.1.full.html#ref-list-1

Citing articles
This article has been cited by 1 HighWire-hosted articles. Access the articles at:
/content/15/2/747.1.full.html#related-urls

E-mail alerts
Sign up to receive free email-alerts related to this article or journal.

Reprints and Subscriptions
To order reprints of this article or to subscribe to the journal, contact the AACR Publications Department at pubs@aacr.org.

Permissions
To request permission to re-use all or part of this article, contact the AACR Publications Department at permissions@aacr.org.