CURCUMIN by Ray Sahelian, M.D.

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Joint Power Rx with Curcumin -- formulated by Ray Sahelian, M.D.

Turmeric (Curcuma longa) is a plant native to south India and Indonesia. Its tuberous rhizomes (root like structures) have been used from antiquity as a condiment, as a textile dye, and medically as an aromatic stimulant. Curcuminoids are the major substances that give the spice turmeric its yellow color. Curry powder which is extensively used in Indian cuisine, is largely made of turmeric and other spices such as coriander and fenugreek.

The major curcuminoids are curcumin, demethoxycurcumin and bisdemethoxycurcumin which are powerful antioxidants and anti-inflammatory compounds.

Curcumin and Turmeric 500 mg, 60 capsules
Physician Formulas -- developed by Ray Sahelian, M.D.

Curcumin is one of the major antioxidants found in the spice turmeric. The roots of the turmeric plant are used as an herb in Asian cooking such as curries. Curcumin is a major component of Turmeric (Curcuma longa) and extensive scientific research on curcumin and turmeric has demonstrated their potent antioxidant properties. Through their antioxidant mechanisms, curcumin and turmeric support colon health, exert neuroprotective activity and help maintain a healthy cardiovascular system.

Click here to learn more about Curcumin, Joint Power Rx, Eyesight Rx, MultiVit Rx, or to sign up to a FREE newsletter

Subscribe to a FREE Supplement Research Update newsletter. Twice a month we email a brief abstract of several studies on various supplements and natural medicine topics, including curcumin, and their practical interpretation by Ray Sahelian, M.D.

Curcumin Supplement Facts:
Curcumin and Turmeric 500 mg *
Usage: Take 1 or 2 curcumin capsules a few times a week with breakfast, or as directed by your health consultant.
*** Curcumin and Turmeric daily value not established**

Joint Power Rx with Turmeric and Curcumin

120 Caps

Physician Formulas -- Formulated by Ray Sahelian, M.D.

Because joint pain is so debilitating, Glucosamine and Chondroitin alone are not enough. This powerful formula includes curcumin and several additional herbal extracts and nutrients that play a role in joint health.

Joint Power Rx Supplement Facts:

Glucosamine sulfate (from shellfish)
Chondroitin sulfate
MSM
CMO complex
Boswellia serrata extract
Turmeric and curcumin
Cat's claw extract
Devil's claw extract
Grape seed extract
Sea Cucumber

Click the Curcumin link above in blue for more information

Health Benefit of Curcumin

Many human trials are needed before we can know with any certainty how we can best use curcumin in medicine. But one thing is certain: most doctors are not, at this time, aware of the potential benefits of this fascinating herb.

Curcumin and Alzheimer's disease

In laboratory studies, curcumin inhibits amyloid formation. Whether curcumin supplements help reduce the incidence of Alzheimer's disease or help improve this condition is not known at this time.

Curcumin and Melanoma

Curcumin, found in the spice turmeric, interferes with melanoma cells. Tests in laboratory dishes show that curcumin made melanoma skin cancer cells more likely to self-destruct in a process known as apoptosis.

Curcumin and Cancer

The same research team that found curcumin interferes with melanoma cells also found curcumin helped stop the spread of breast cancer tumor cells to the lungs of mice. The curcumin suppressed two proteins that tumor cells use to keep themselves immortal. Studies evaluating the role of curcumin and cancer continue to advance at a fast rate.

Curcumin Research update

Curcumin therapy in inflammatory bowel disease: a pilot study.
Dig Dis Sci. 2005 Nov;50(11):2191-3. Holt PR, Katz S, Kirshoff R.
St. Luke's Roosevelt Hospital Center, Columbia University and Strang Cancer Center Research Laboratory, New York, New York.
Curcumin, a natural compound used as a food additive, has been shown to have anti-inflammatory and antioxidant properties in cell culture and animal studies. A pure curcumin preparation was administered in an open label study to five patients with ulcerative proctitis and five with Crohn's disease. All proctitis patients improved, with reductions in concomitant medications in four, and four of five Crohn's disease patients had lowered CDAI (crohn's disease activity index) scores and sedimentation rates. This encouraging pilot study suggests the need for double-blind placebo-controlled follow-up studies.

Turmeric, a yellow spice used widely in Indian cooking, stops the spread of cancer in mice. Curcumin, an active compound found in turmeric, helped stop the spread of breast cancer tumor cells to the lungs of mice. Tests have already started in people, too, said Bharat Aggarwal of the Department of Experimental Therapeutics at the University of Texas M.D. Anderson Cancer Center in Houston, who led the study. Earlier research showed that curcumin, an antioxidant, can help prevent tumors from forming in the laboratory. For their study, Aggarwal and colleagues injected mice with human breast cancer cells -- a batch of cells grown from a patient whose cancer had spread to the lungs. The resulting tumors were allowed to grow, and then surgically removed, to simulate a mastectomy, Aggarwal said. Then the mice either got no additional treatment; curcumin alone; the cancer drug paclitaxel, which is sold under the brand name Taxol; or curcumin plus Taxol. Half the mice in the curcumin -only group and 22 percent of those in the curcumin plus Taxol group had evidence of breast cancer that had spread to the lungs. But 75 percent of animals that got Taxol alone and 95 percent of those that got no treatment developed lung tumors. Earlier studies suggest that people who eat diets rich in turmeric have lower rates of breast cancer, prostate cancer, lung cancer and colon cancer. His team would like to try giving curcumin to women with a high risk of breast cancer -- such as those who have a mother or sister with the disease.
No drug company is likely to develop a natural product that cannot be patented, he said. "There are no companies behind it so our only source of funding is either the National Institutes of Health or the Department of Defense," he said. This study was funded by the U.S. Department of Defense's Breast Cancer Research Program. Aggarwal's team is also testing curcumin against pancreatic cancer and multiple myeloma.

Curcumin -induced antiproliferative and proapoptotic effects in melanoma cells are associated with suppression of IkappaB kinase and nuclear factor kappaB activity and are independent of the B-Raf/mitogen-activated/extracellular signal-regulated protein kinase pathway and the Akt pathway.
Cancer. 2005 Jul 11
Siwak DR, Shishodia S, Aggarwal BB, Kurzrock R. Department of Experimental Therapeutics, The University of Texas M. D. Anderson Cancer Center, Houston, Texas.
Nuclear factor-kappaB (NF-kappaB) plays a central role in cell survival and proliferation in human melanoma; therefore, the authors explored the possibility of exploiting NF-kappaB for melanoma treatment by using curcumin, an agent with known, potent, NF-kappaB-inhibitory activity and little toxicity in humans. Cucumin Cancer. CONCLUSIONS: Curcumin

has potent antiproliferative and proapoptotic effects in melanoma cells.

Consumption of the putative chemopreventive agent curcumin by cancer patients: assessment of curcumin levels in the colorectum and their pharmacodynamic consequences.
Cancer Epidemiol Biomarkers Prev. 2005 Jan;14(1):120-5.
Curcumin, a constituent of the spice turmeric, has been shown to reduce the adenoma burden in rodent models of colorectal cancer. We tested the hypothesis that pharmacologically active levels of curcumin can be achieved in the colorectum of humans. Patients with colorectal cancer ingested curcumin capsules (3,600, 1,800, or 450 mg daily) for 7 days. Biopsy samples of normal and malignant colorectal tissue, respectively, were obtained at diagnosis and at 6 to 7 hours after the last dose of curcumin. Blood was taken 1 hour after the last dose of curcumin. Curcumin and its metabolites were detected and quantitated by high-performance liquid chromatography with detection by UV spectrophotometry or mass spectrometry. The concentrations of curcumin in normal and malignant colorectal tissue of patients receiving 3,600 mg of curcumin were 12.7 +/- 5.7 and 7.7 +/- 1.8 nmol/g, respectively. Curcumin sulfate and curcumin glucuronide were identified in the tissue of these patients. Trace levels of curcumin were found in the peripheral circulation. The results suggest that a daily dose of 3.6 g curcumin achieves pharmacologically efficacious levels in the colorectum with negligible distribution of curcumin outside the gut.

Curcumin inhibits formation of Abeta oligomers and fibrils and binds plaques and reduces amyloid in vivo.
J Biol Chem. 2004 Dec 7. Yang F, et al. University of California Los Angeles, North Hills, CA
Alzheimer's disease (AD) involves amyloid (Abeta) accumulation, oxidative damage and inflammation, and risk is reduced with increased antioxidant and anti-inflammatory consumption. The phenolic yellow curry pigment curcumin has potent anti-inflammatory and antioxidant activities and can suppress oxidative damage, inflammation, cognitive deficits, and amyloid accumulation. Since the molecular structure of curcumin suggested potential Ass-binding, we investigated whether its efficacy in AD models could be explained by effects on Ass aggregation. Under aggregating conditions in vitro, curcumin inhibited aggregation as well as disaggregated fibrillar Ass40, indicating favorable stoichiometry for inhibition. Curcumin was a better Abeta40 aggregation inhibitor than ibuprofen and naproxen, and prevented Abeta42 oligomer formation and toxicity. Under electron microscopy, curcumin decreased dose-dependently Ass fibril formation. Curcumin's effects did not depend on Abeta sequence but on fibril-related conformation. AD and Tg2576 mice brain sections incubated with curcumin revealed preferential labeling of amyloid plaques. In vivo studies showed that curcumin injected peripherally into aged Tg mice, crossed the blood brain barrier and bound plaques. When fed to aged Tg2576 mice with advanced amyloid accumulation, curcumin labeled plaques and reduced amyloid levels and plaque burden. Hence, curcumin directly binds small ss-amyloid species to block aggregation and fibril formation in vitro and in vivo. These data suggest that low dose curcumin effectively disaggregates Ass as well as prevents fibril and oligomer formation, supporting the rationale for curcumin use in clinical trials preventing or treating AD.

Phase I clinical trial of oral curcumin: biomarkers of systemic activity and compliance.

Clin Cancer Res. 2004 Oct 15;10(20):6847-54.
Curcumin, a polyphenolic antioxidant derived from a dietary spice, exhibits anticancer activity in rodents and in humans. Its efficacy appears to be related to induction of glutathione S-transferase enzymes, inhibition of prostaglandin E(2) (PGE(2)) production, or suppression of oxidative DNA adduct (M(1)G) formation. We designed a dose-escalation study to explore the pharmacology of curcumin in humans. Fifteen patients with advanced colorectal cancer refractory to standard chemotherapies consumed capsules compatible with curcumin doses between 0.45 and 3.6 g daily for up to 4 months. Levels of curcumin and its metabolites in plasma, urine, and feces were analyzed. Three biomarkers of the potential activity of curcumin were translated from preclinical models and measured in patient blood leukocytes: glutathione S-transferase activity, levels of M(1)G, and PGE(2) production induced ex vivo. Dose-limiting toxicity was not observed. Curcumin and its glucuronide and sulfate metabolites were detected in plasma in the 10 nmol/L range and in urine. A daily dose of 3.6 g curcumin engendered 62% and 57% decreases in inducible PGE(2) production in blood samples taken 1 hour after dose on days 1 and 29, respectively, of treatment compared with levels observed immediately predose. A daily oral dose of 3.6 g of curcumin is advocated for Phase II evaluation in the prevention or treatment of cancers outside the gastrointestinal tract. Levels of curcumin and its metabolites in the urine can be used to assess general compliance.

Phytoestrogens in common herbs regulate prostate cancer cell growth in vitro.
Nutr Cancer. 2004;49(2):200-8. Shenouda NS, Zhou C
Missouri University Center for Phytonutrient and Phytochemical Studies, University of Missouri, Columbia
Prostate cancer is an important public health problem in the United States. Seven phytoestrogens found in common herbal products were screened for estrogen receptor binding and growth inhibition of androgen-insensitive (PC-3) and androgen-sensitive (LNCaP) human prostate tumor cells. In a competitive 3H-estradiol ligand binding assay using mouse uterine cytosol, 2.5 M quercetin, baicalein, genistein, epigallocatechin gallate (EGCG), and curcumin displaced > 85% of estradiol binding, whereas apigenin and resveratrol displaced > 40%. From growth inhibition studies in LNCaP cells, apigenin and curcumin were the most potent inhibitors of cell growth, and EGCG and baicalein were the least potent. In PC-3 cells, curcumin was the most potent inhibitor of cell growth, and EGCG was the least potent. In both cell lines, significant arrest of the cell cycle in S phase was induced by resveratrol and EGCG and in G2M phase by quercetin, baicalein, apigenin, genistein, and curcumin. Induction of apoptosis was induced by all of the 7 compounds in the 2 cell lines. Androgen responsiveness of the cell lines did not correlate with cellular response to the phytoestrogens. In conclusion, these 7 phytoestrogens, through different mechanisms, are effective inhibitors of prostate tumor cell growth.

Turmeric, a spice used extensively in Asia as a key ingredient of curry, may be protecting children against leukemia. Curcumin inhibits the multiplication of leukemia cells in laboratory studies and seems to protect against damage caused by cigarette smoke and eating certain processed foods.

Curcumin modulates free radical quenching in myocardial ischaemia in rats.
Int J Biochem Cell Biol. 2004 Oct;36(10):1977-90.
This study was designed to investigate the protective effect of curcumin against

isoprenaline induced myocardial ischaemia in rat myocardium. The effect of single oral dose of curcumin,, administered 30min before and/or after the onset of ischaemia, was investigated by assessing oxidative stress related biochemical parameters in rat myocardium. Curcumin pre and post-treatment (PPT) was shown to decrease the levels of xanthine oxidase, superoxide anion, lipid peroxides and myeloperoxidase while the levels of superoxide dismutase, catalase, glutathione peroxidase, glutathione-S-transferase activities were significantly increased after curcumin PPT. Histopathological and transmission electron microscopical studies also confirmed the severe myocardial damage occurring as a consequence of isoprenaline induced ischaemia and they also showed the significant improvement effected by curcumin. These findings provided evidence that curcumin was found to protect rat myocardium against ischaemic insult and the protective effect could be attributed to its antioxidant properties as well as its inhibitory effects on xanthine dehydrogenase/xanthine oxidase conversion and resultant superoxide anion production.

Inhibition of colonic aberrant crypt foci by curcumin in rats is affected by age.
Nutr Cancer. 2004;48(1):37-43.
Curcumin has antioxidative, anti-inflammatory, and chemopreventive activities. To determine whether aging affects the inhibition of colon carcinogenesis by curcumin, young (6 wk), mature (12 mo), and old (22 mo) F344 male rats were fed either 0.6% curcumin or a control diet. Aberrant crypt foci (ACF) were induced with two weekly s.c. injections of azoxymethane. After an additional 3 mo on the diets, the number, multiplicity, and distribution of ACF were evaluated. Addition of curcumin to the diet reduced the number of ACF by 49% in young rats and by 55% in old rats. However, interestingly, no reduction of ACF was found in mature rats fed curcumin. Inhibition of large ACF was also affected by age, with the greatest reduction of large ACF occurring in old rats. However, animal age did not significantly alter the effect of dietary curcumin on reduction of cyclooxygenase-2 mRNA expression in the liver or reduction of serum total cholesterol levels. These results indicate that age may play a significant role in the efficacy of chemoprevention of colon cancer by curcumin.

Curcumin has potent anti-amyloidogenic effects for Alzheimer's beta-amyloid fibrils in vitro.
Ono K. J Neurosci Res. 2004 Mar 15;75(6):742-50.
Inhibition of the accumulation of amyloid beta-peptide (Abeta) and the formation of beta-amyloid fibrils (fAbeta) from Abeta, as well as the destabilization of preformed fAbeta in the central nervous system, would be attractive therapeutic targets for the treatment of Alzheimer's disease (AD). Although the mechanism by which Curcumin and RA inhibit fAbeta formation from Abeta and destabilize preformed fAbeta in vitro remains unclear, they could be a key molecule for the development of therapeutics for AD.

Antimutagenic potential of curcumin on chromosomal aberrations in Wistar rats.
Shukla Y. Industrial Toxicology research Centre, P.O. Box 80, M.G. Marg, UP 226001, Lucknow, India
Curcumin, a yellow pigment commonly used as a spice and food coloring agent is obtained from rhizomes of Curcuma longa and is a major chemopreventive component of turmeric. In the present set of investigations the antimutagenic potential of curcumin has been evaluated using in vivo chromosomal aberration assay in Wistar rats. Cyclophosphamide (CP), a well-known mutagen was given. Curcumin was given through gastric intubation for

seven consecutive days prior to CP treatment. The incidence of aberrant cells was found to be reduced by both the doses of curcumin when compared to CP treated group. The anticytotoxic potential of curcumin towards CP was also evident as the status of mitotic index was found to show increment. The study revealed the antigenotoxic potential of curcumin against CP induced chromosomal mutations.

Curcumin and resveratrol induce apoptosis and nuclear translocation and activation of p53 in human neuroblastoma.
Anticancer Res. 2004 Mar-Apr;24(2B):987-98.
Neuroblastoma (NB) is an aggressive childhood cancer of the peripheral nervous system arising from neural crest sympathoadrenal progenitor cells. Despite current rigorous treatment protocols, prognosis for high stage NB patients is poor and so there remains a need for more effective, less cytotoxic treatments. Curcumin and resveratrol possess anti-tumor properties in adult cancer models and negligible toxicity in normal cells, but little is known about the effect of these agents on pediatric cancers. Stage 4 MYCN-amplified NB cell lines, with wild-type or mutant p53, were treated with curcumin and resveratrol and analyzed for effects on proliferation, cell cycle, induction of apoptosis and p53 function. RESULTS: Treatment with resveratrol and curcumin induced a dose- and time-dependent decrease in cell viability, cell cycle arrest and induction of apoptosis. CONCLUSION: Observations suggest that the cytotoxicity, cell cycle arrest and apoptosis induced by curcumin and resveratrol in NB cells may be mediated via functionally activated p53 and merit further study.

Antioxidant effect of curcumin in selenium induced cataract of Wistar rats.
Indian J Exp Biol. 2004 Jun;42(6):601-3.
Wistar rat pups treated with curcumin, a natural constituent of Curcuma longa before being administered with selenium showed no opacities in the lens. The lipid peroxidation, xanthine oxidase enzyme levels in the lenses of curcumin and selenium co-treated animals were significantly less when compared to selenium treated animals. The superoxidase dismutase and catalase enzyme activities of curcumin and selenium co-treated animal lenses showed an enhancement. Curcumin co-treatment seems to prevent oxidative damage and found to delay the development of cataract.

Curcumin inhibits experimental allergic encephalomyelitis by blocking IL-12 signaling through Janus kinase-STAT pathway in T lymphocytes.
J Immunol. 2002 Jun 15;168(12):6506-13.
Experimental allergic encephalomyelitis (EAE) is a CD4(+) Th1 cell-mediated inflammatory demyelinating autoimmune disease of the CNS that serves as an animal model for multiple sclerosis. IL-12 is a proinflammatory cytokine that plays a crucial role in the induction of neural Ag-specific Th1 differentiation and pathogenesis of CNS demyelination in EAE and multiple sclerosis. Curcumin is a naturally occurring polyphenolic phytochemical isolated from the rhizome of the medicinal plant Curcuma longa. Curcumin has profound anti-inflammatory activity and been traditionally used to treat inflammatory disorders. In this study we have examined the effect and mechanism of action of curcumin on the pathogenesis of CNS demyelination in EAE. In vivo treatment of SJL/J mice with curcumin significantly reduced the duration and clinical severity of active immunization and adoptive transfer EAE. Curcumin inhibited EAE in association with a decrease in IL-12 production

from macrophage/microglial cells and differentiation of neural Ag-specific Th1 cells. These findings highlight the fact that curcumin inhibits EAE by blocking IL-12 signaling in T cells and suggest its use in the treatment of multiple sclerosis and other Th1 cell-mediated inflammatory diseases.

Curcumin -- Efficacy of turmeric on blood sugar and polyol pathway in diabetic albino rats. In the traditional system of medicine, Ayurveda, several spices and herbs are thought to possess medicinal properties. Among the spices, turmeric rhizomes (Curcuma longa. Linn.) are used as flavoring and coloring agents in the Indian diet everyday. In this research, we studied the effect of turmeric and its active principle, curcumin, on diabetes mellitus in a rat model. Alloxan was used to induce diabetes. Administration of turmeric or curcumin to diabetic rats reduced the blood sugar, Hb and glycosylated hemoglobin levels significantly. Turmeric and curcumin supplementation also reduced the oxidative stress encountered by the diabetic rats. This was demonstrated by the lower levels of TBARS (thiobarbituric acid reactive substances), which may have been due to the decreased influx of glucose into the polyol pathway leading to an increased NADPH/NADP ratio and elevated activity of the potent antioxdiant enzyme GPx. Moreover, the activity of SDH (sorbitol dehydrogenase), which catalyzes the conversion of sorbitol to fructose, was lowered significantly on treatment with turmeric or curcumin. These results also appeared to reveal that curcumin was more effective in attenuating diabetes mellitus related changes than turmeric.

Curcumin Alzheimer's
Curcumin and boswellia are sometimes found together in products

Curcumin Emails

Q. My 24 year old son has recently finished radiation with low dose oral chemotherapy (with temador)for a brain tumor. He is currently getting 5 days on and 23 days off of oral Temador. He is also taking curcumin. How many capsules and how often should he take that supplement? Should he continue taking curcumin even while he is not taking the oral chemotherapy?
A. We really wish we could give an informed opinion, but it is difficult to know how curcumin is influencing the cancer, if any, how many mg would be effective if it does work, what the interaction are with the chemotherapy, etc.... Hardly any human trials are available with curcumin and cancer, so it is extremely difficult to make any suggestions. We truly wish your son a healthy recovery.

Q. Is curcumin capable of raising blood pressure?
A. We have not seen any studies that would indicate curcumin raises blood pressure.

Q. My father has primary amyloidosis and it has affected both his liver as well as the digestive system. Have you known of Tumeric and Curcumin to improve liver function. I respect the work that you do.
A. Most of the time people taking curcumin are taking other supplements. We have not tested liver health specifically after taking curcumin capsules by themselves.

Q. First I would like to compliment you on a fantastic job. Not only are you giving excellent information on the uses of natural supplements but you are so right about the dangers of some pharmaceuticals. Just a note on curcumin. You are so right again. It is a powerful

antioxidant. I read over most of what you said. Did not remember seeing anything about a study that I read once that caused me to start taking it myself. In this study two groups of people were separated. Smokers & non smokers. Before the 30 day trial was begun the groups were tested for levels of carcinogens in their urine. The Smokers were given tumeric and the non smokers weren't. After the month was up they were both tested again. The smokers urine tested nearly as free of carcinogens as the non smokers! Curcumin boosts phase two liver function where the toxins that are bound with fats are processed and removed. It was enough to convince me that it would be very beneficial to supplement with. I also take milk thistle to regenerate my liver. Five years ago I had elevated liver enzymes and I brought them under control using herbal supplements. I have been an herbalist for over 25 years and have always believed in good nutrition and supplements. My hat's off to you.

Q. I have been attending the dental hospital in Walers U.K. under Prof. Lewis for a Lichenoid infection on my tongue. Dr. Lewis, in desperation, to try and find some relief for my condition which was not responding well to other treatment, had seen your web site on curcumin and asked me to give it a try. I ordered curcumin and I have religiously taken two capsuls a day for three months and I am so pleased with the results. Although the condition has not completely gone, it is 100 times better than it was and Prof. Lewis is really enthused with the results, and has said that I may be one of the first to try such curcumin treatment over here in the U.K.!! You can't imagine how much it means to me to be almost free from pain and able to start eating foods which are acidy and spicy, in moderation. I know that the Lichenoid infection condition has no complete cure, but at least there is hope on the horizon for the many sufferers of this unpleasant condition. Thank you so much, I will continue to take the curcumin capsules long term. Regards. P>S> I don't mind my name being used if you think this is worthy of your website. Judith Pearce.

A. Thanks! We are glad curcumin may have helped you, please keep us updated. Can you tell us the actual name of the skin condition?

Q. Thank you so much for taking the time to reply to my email, it was much appreciated, as I know how busy you must be. The medical name for my complaint in Lichen Planus, My tongue is very sore with blisters and lesions which subside at times and other times are very inflamed and extremely sore leaving me virtually unable to eat, or at best a diet of bland sandwiches!! I do find that the curcumin helps very much indeed and I would urge anyone who wants to try it, to do so and persevere over a period of three months to see the best results. I will keep you posted regarding my progress. The other advantage also of the curcumin, is that you can take it long term without having to have a "rest" period once a week. Regards, Judith.

A. One case history does not prove anything. Curcumin may have been the herb that helped your lichen planus, and we eagerly await other reports from those with lichen planus to see if your response was an isolated case or whether in fact curcumin is helpful for lichen planus. If we do get several reports of such help, then perhaps a dermatologist or researcher may wish to investigate the role of curcumin in this skin condition.