



## Absorption Study OA Studies

### ABSORPTION STUDY

#### *Comparative Absorption of a Standardized Curcuminoid Mixture and Its Lecithin Formulation.*

John Cuomo, Giovanni Appendino, Adam S. Dern, Erik Schneider, Toni P. McKinnon, Mark J. Brown, Stefano Togni, and Brian M. Dixon. USANA Health Sciences, Inc., 3838 West Parkway Boulevard, Salt Lake City, Utah 84120, United States. Oct 2010.

#### ABSTRACT:

The relative absorption of a standardized curcuminoid mixture and its corresponding lecithin\* formulation (Meriva) was investigated in a randomized, double-blind, cross-over human study. Clinically validated dosages were used for both products, and plasma levels of all three major curcuminoids (curcumin), demethoxycurcumin, and bisdemethoxycurcumin were evaluated. Total curcuminoid absorption was about 29-fold higher for Meriva than for its corresponding unformulated curcuminoid mixture, but only phase-2 metabolites could be detected, and plasma concentrations were still significantly lower than those required for the inhibition of most anti-inflammatory targets of curcumin. Remarkably, phospholipid formulation (Meriva) increased the absorption of demethoxylated curcuminoids much more than that of standard curcumin, with significant differences in plasma curcuminoid profile between Meriva and its corresponding unformulated curcuminoid mixture. Thus, the major plasma curcuminoid after administration of Meriva was not curcumin, but demethoxycurcumin, a more potent analogue in many in vitro anti-inflammatory assays. The improved absorption, and possibly also a better plasma curcuminoid profile, might underlie the clinical efficacy of Meriva at doses significantly lower than unformulated curcuminoid mixtures.

### OA STUDIES

#### *Product-evaluation registry of Meriva®, a curcumin-phosphatidylcholine complex, for the complementary management of osteoarthritis.*

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#### ABSTRACT:

A proprietary complex of curcumin with soy phosphatidylcholine (Meriva®, Indena SpA) was evaluated in a registry study to define its efficacy in 50 patients with osteoarthritis (OA) at dosages corresponding to 200 mg curcumin per diem.

*Methods:* OA signs/symptoms were evaluated by the WOMAC scores. Mobility was studied by walking performance (treadmill), and inflammatory status was assessed by measurements of C-reactive protein (CRP).

*Results:* After three months of treatment, the global WOMAC score decreased by 58% ( $P < 0.05$ ), walking distance in the treadmill test was prolonged from 76 m to 332 m ( $P < 0.05$ ), and CRP levels decreased from  $168 \pm 18$  to  $11.3 \pm 4.1$  mg/L in the subpopulation with high CRP. In comparison, the control group experienced only a modest improvement in these parameters (2% in the WOMAC score, from 82 m to 129 m in the treadmill test, and from  $175 \pm 12.3$  to  $112 \pm 22.2$  mg/L in the CRP plasma concentration), while the treatment costs (use of anti-inflammatory drugs, treatment and hospitalization) were reduced significantly in the treatment group.

*Conclusion:* These results show that Meriva® is clinically effective in the management and treatment of osteoarthritis and suggests that the increased stability and better absorption of curcumin induced by complexation with phospholipids has clinical relevance and sets the stage for larger and more prolonged studies.

***Efficacy and Safety of Meriva®, a Curcumin-phosphatidylcholine Complex, during Extended Administration in Osteoarthritis Patients.***

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**ABSTRACT:**

In a previous three-month study of Meriva®, a proprietary curcumin-phosphatidylcholine phytosome complex, decreased joint pain and improvement in joint function were observed in 50 osteoarthritis (OA) patients. Since OA is a chronic condition requiring prolonged treatment, the long-term efficacy and safety of Meriva were investigated in a longer (eight months) study involving 100 OA patients. The clinical end points (Western Ontario and McMaster Universities [WOMAC] score, Karnofsky Performance Scale Index, and treadmill walking performance) were complemented by the evaluation of a series of inflammatory markers (interleukin [IL]-1b, IL-6, soluble CD40 ligand [sCD40L], soluble vascular cell adhesion molecule (sVCAM)-1, and erythrocyte sedimentation rate [ESR]). This represents the most ambitious attempt, to date, to evaluate the clinical efficacy and safety of curcumin as an anti-inflammatory agent. Significant improvements of both the clinical and biochemical end points were observed for Meriva compared to the control group. This, coupled with an excellent tolerability, suggests that Meriva is worth considering for the long-term complementary management of osteoarthritis.