

Curcumin SAP

Curcumine extraite de racine de curcuma, basée sur la science

Le curcuma (*Curcuma longa*) est une plante originaire du sud de l'Inde et de l'Indonésie qui a été utilisé en Asie pendant des milliers d'années en tant qu'épice et herbe médicinale. En médecine Ayurvédique, il est utilisé pour la cicatrisation des plaies et les affections respiratoires. Des preuves substantielles provenant d'études humaines cliniques et précliniques démontrent les nombreuses propriétés bénéfiques, y compris les activités anti-inflammatoires, antioxydantes et immunomodulatrices de l'extrait de rhizome de curcuma. Les propriétés médicinales des extraits de curcuma sont principalement attribuées aux composés polyphénoliques bioactifs appelés curcuminoïdes, en particulier la curcumine. La curcumine a été largement étudiée pour son large éventail de bienfaits pour la santé tels que le soutien de la santé du côlon, y compris les maladies inflammatoires de l'intestin, la polyarthrite rhumatoïde, la santé de la prostate, l'immunomodulation, la neuroprotection et la promotion de la santé cardiovasculaire. Cependant, la curcumine a une faible biodisponibilité en raison de sa faible solubilité dans l'eau et de son métabolisme rapide et de son élimination systémique lors de la consommation orale. NFH offre le **Curcumin SAP** avec de la pipérine ajoutée qui aide à améliorer la biodisponibilité et l'efficacité de la curcumine pour une santé optimale.

INGRÉDIENTS ACTIFS

Chaque capsule végétale sans OGM contient :

Curcumine, 95 % de curcuminoïdes	500 mg
Extrait de fruit de poivre noir (<i>Piper nigrum</i>), 98 % de pipérine	5 mg

Fournissant curcumine I, déméthoxycurcumine, et biséméthoxycurcumine

Ce produit est sans OGM.

Ne contient pas : Gluten, soja, blé, maïs, œufs, produits laitiers, levure, agrumes, agents de conservation, arôme ou colorant artificiels, amidon, ou sucre.

Curcumin SAP (antioxydant) contient 90 capsules par bouteille.

DIRECTIVES D'UTILISATION

Adultes : Prendre 1-2 capsules par jour ou tel qu'indiqué par votre praticien de soins de santé. Consulter un praticien de soins de santé pour une utilisation au-delà de 12 semaines.

PRÉCAUTIONS ET AVERTISSEMENTS

Consulter un praticien de soins de santé avant d'utiliser si vous êtes enceinte; si vous prenez des médicaments antiplaquettaires ou des anticoagulants; si vous avez des calculs biliaires ou une obstruction du conduit biliaire; si vous avez des ulcères d'estomac ou un surplus d'acides gastriques; ou si vous prenez d'autres médicaments ou produits de santé naturels, puisque le poivre noir / la pipérine peut altérer leur efficacité. Consulter un praticien de soins de santé si les symptômes persistent ou s'aggravent.

INDICATIONS

- **Curcumin SAP** peut aider à améliorer l'inflammation chronique pour gérer les maladies inflammatoires de l'intestin.
- **Curcumin SAP** peut être utilisé pour favoriser la santé du côlon et du côlon sigmoïde
- **Curcumin SAP** peut aider à promouvoir une immunomodulation optimale.

EXTRACTION POUR AMÉLIORER LA TENEUR

Curcumin SAP est préparé en utilisant une extraction de *Curcuma longa* à l'éthanol pour une isolation optimale des curcuminoïdes.

PURETÉ, PROPRETÉ, ET STABILITÉ

Tous les ingrédients énumérés pour chaque lot de **Curcumin SAP** ont été validés par un laboratoire externe pour l'identité, la puissance, et la pureté.



Panel-conseil scientifique (PCS) :
recherche nutraceutique ajoutée
pour atteindre une meilleure santé



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Curcumin SAP

Science-based curcumin extract from turmeric root

Turmeric (*Curcuma longa*) is a plant native to South India and Indonesia that has been valued in Asia for thousands of years as a spice and medicinal herb. In Ayurvedic medicine, it is used for wound healing and respiratory conditions. Substantial evidence from pre-clinical and human clinical studies demonstrate the numerous beneficial properties, including anti-inflammatory, antioxidant and immunomodulatory activities of turmeric rhizome extract. Turmeric extracts medicinal properties are mainly attributed to the bioactive polyphenolic compounds called curcuminoids, especially curcumin. Curcumin has been extensively studied for its vast range of health benefits such as supporting colon health, including inflammatory bowel diseases, rheumatoid arthritis, prostate health, immunomodulation, neuroprotection and promoting cardiovascular health. However, curcumin has poor bioavailability owing to its low water solubility and rapid metabolism and systemic elimination upon oral consumption. NFH offers evidence-based **Curcumin SAP** with added piperine that helps improve bioavailability and efficacy of curcumin for optimal health.

ACTIVE INGREDIENTS

Each vegetable capsule contains:

Turmeric (*Curcuma longa*) root extract, 95% curcuminoids 500 mg

Black pepper (*Piper nigrum*) fruit extract, 98% piperine 5 mg

NFH's **Curcumin SAP** is tested for curcumin I, demethoxycurcumin, and bisdemethoxycurcumin.

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, starch, or sugar.

Curcumin SAP (antioxidant) contains 90 capsules per bottle.

DIRECTIONS FOR USE

Adults: Take 1-2 capsules daily or as directed by your health-care practitioner. Consult a health-care practitioner for use beyond 12 weeks.

CAUTIONS AND WARNINGS

Consult a health-care practitioner prior to use if you are pregnant; if you are taking antiplatelet medication or blood thinners; if you have gallstones or a bile duct obstruction; if you have stomach ulcers or excess stomach acid; or if you are taking any other medications or natural health products, as black pepper/piperine may alter their effectiveness. Consult a health-care practitioner if symptoms persist or worsen. Do not take Curcumin SAP concurrently with chemotherapy, as it may interfere with the activity of chemotherapy drugs. Curcumin SAP may be taken before and after completion of chemotherapy protocol.

INDICATIONS

- **Curcumin SAP** can help improve chronic inflammation to manage inflammatory bowel diseases.
- **Curcumin SAP** can be used to promote colon and sigmoid colon health.
- **Curcumin SAP** can help promote optimal immunomodulation.

EXTRACTION TO ENHANCE CONTENT

Curcumin SAP has been prepared using an ethanol extraction of *Curcuma longa* for optimal curcuminoid isolation.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Curcumin SAP** lot numbers have been validated by a third-party laboratory for identity, potency, and purity.



Scientific Advisory Panel (SAP):
adding nutraceutical research
to achieve optimum health



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SCIENCE-BASED CURCUMIN EXTRACT FROM TURMERIC ROOT

Turmeric (*Curcuma longa* L.) is a medicinal plant reputed for its use as a spice and herbal remedy in China and India for over 2000 years.^[1, 2] In Ayurvedic medicine, turmeric is used for common eye infections, wounds, respiratory ailments, and childbirth.^[3] Recent research on this vibrant yellow spice has revealed its numerous beneficial properties, including anti-inflammatory, antioxidant, immunomodulatory activities that have been demonstrated in pre-clinical and human clinical trials.^[4, 5] It has also demonstrated antithrombotic and antiplatelet activity, and the therapeutic efficacy of curcumin against various human diseases — including cancer, cardiovascular diseases, diabetes, arthritis, neurodegenerative diseases including Alzheimer's disease,^[6] and Crohn's disease — has been very well documented.^[1, 2] These medicinal properties of turmeric are mainly attributed to bioactive polyphenolic compounds called curcuminoids which include three principal components namely curcumin (diferuloylmethane; 77%), demethoxycurcumin (also known as curcumin I; 17%) and bisdemethoxycurcumin (also known as curcumin II; 6%).^[1] Curcuminoids are obtained from dried rhizomes of turmeric and exert significant anti-inflammatory and cardioprotective effects.^[4]

CURCUMIN-PIPERINE SYNERGY

Combination of curcumin/curcuminoids and piperine from *Piper nigrum* extract has been clinically shown to increase the bioavailability of curcuminoids by almost 20 folds.^[7] Researchers reported the specific increase in bioavailability of curcumin itself and not its phase II metabolites. The rapid biotransformation of curcumin via phase II metabolism lowers the bioactivity of curcumin. Piperine is known to inhibit the formation of phase II metabolites by inhibiting hepatic and intestinal glucuronidation.^[8] Simultaneous consumption of 5 mg of piperine along with Curcuminoids has shown to increase the bioavailability of curcumin.^[6] In addition, the thermogenesis activity of piperine facilitates sustenance of the metabolic process and enables better absorption of nutrients in the intestine.^[5, 6]

COLON AND DIGESTIVE HEALTH

Inflammatory Bowel diseases

Curcumin has been known to promote colon health by playing a key role by modulating NF- κ B pro-inflammatory cytokines and the IL-6/STAT3 signaling pathway and could be therapeutically useful in several colonic inflammatory diseases, such as inflammatory bowel disease (IBD; ulcerative colitis and Crohn's disease).^[9] Two clinical studies have evaluated the use of curcumin in IBD in 99 patients with UC and CD.^[7, 8] As an adjunct to mainstream therapy (sulfasalazine (SZ) or mesalazine (5-aminosalicylic acid [5-ASA] derivatives or corticosteroids), curcumin dosed at 1100-2000 mg/day over 2-6 months duration has been shown to significantly improve patient symptoms in UC/CD patients compared to the placebo and enabled dosage reduction of corticosteroids or 5-ASA derivatives.^[7, 8] Researchers reported that in the small study of 10 patients, some patients even stopped taking corticosteroids or 5-ASA.^[7] Researchers also noted that curcumin had better clinical efficacy over placebo in the prevention of relapse and was well-tolerated.^[8] Based on this evidence, curcumin could be a promising and safe therapy for maintaining remission in patients with IBD and can be used as a steroid-sparing induction agent in mild to moderate colitis or as an adjunct to maintain remission in patients non-responsive to immunomodulators.

Colorectal Cancer

Colorectal cancer (CRC) is the second leading cause of cancer deaths in Canadian men and women.^[10] Risk factors for the disease include advancing age, colorectal polyps, inflammatory bowel disease, a diet high in red meat, physical inactivity, obesity, and type II diabetes.^[10] Curcumin has been shown to attenuate the progression of CRC by acting on multiple molecular processes to arrest the cell cycle, inhibit the inflammatory and oxidative stress responses, and slow angiogenesis.^[11, 12, 13] An *in vitro* study examining metastatic colon cancer cell lines HCT-116 and SW480 discerned that inhibition of the cancer cell proteasome, leading to suppression of cell proliferation and subsequent apoptosis, could be one of the mechanisms for the chemopreventive roles of curcumin in human colon cancer.^[14] Curcumin also modulates other key players involved in carcinogenesis, such as cyclooxygenase-2 (COX-2), matrix metalloproteinases 2 and 9 and tumor necrosis factor α -induced vascular cell adhesion molecule.^[15] In two separate clinical trials, the effect of curcumin on malignancies and tumor marker levels in fifteen patients with advanced CRC refractory to standard chemotherapies was explored. [16] Patients were administered a standardized *C. longa* extract in capsule form (at doses ranging from 440 to 2200 mg/d, corresponding to 36-180 mg of curcumin) for up to 4 months. *C. longa* extract was well-tolerated, and dose-limiting toxicity was not observed. In a follow-up second dose-escalation study where doses were increased to 0.45 and 3.6 g/d for 4 months, decreases of 62% and 57% in inducible plasma prostaglandin E₂ (PGE₂) levels were observed. [16] PGE₂ is an end product of cyclooxygenase that has been shown to stimulate the growth of human colorectal cancer cells.^[16] In another study evaluating the effects of curcumin levels in the colorectum and the pharmacodynamics of curcumin in 12 patients with confirmed CRC, a dosage level of 3.6 g of curcumin was reported to be pharmacologically efficacious in reducing MTG levels, but not COX-2 levels in malignant colorectal tissue.^[17] Noteworthy, curcumin levels were found to be highest in the normal tissue of the cecum and the ascending colon as opposed to the transverse colon, the splenic flexure and the descending colon, which suggests a local effect.^[17] Curcumin has been observed to act as an adjunct in combination with other agents for the prevention and treatment of CRC.^[18] Familial adenomatous polyposis (FAP) is an autosomal-dominant disorder characterized by hundreds of colorectal adenomas that eventually develop into CRC. In one study, supplementation with curcumin-quercetin combination (480 mg and 20 mg, respectively), for 6 months suppressed adenomas in patients with FAP evidenced by the reduction in size and number of ileal and rectal polyps. [18] In another study, oral curcumin supplementation at 4 g/day for 1 month significantly reduced the number of abnormal crypt foci. Curcumin has demonstrated the potential to be beneficial in all 3 stages of carcinogenesis.^[19] A recent cell culture study found that curcumin curcumin selectively destroys colon cancer cells sparing normal cells by increasing the level of the growth arrest and DNA-damage-inducible protein (GADD45- α), which is known to be activated during DNA damage. Interestingly, curcumin was found to not trigger the increase of the same protein in normal cells.^[20] These observations suggest the potential chemopreventive role of curcumin in colon cancer.

CURCUMIN WATER SOLUBILITY AND BIOAVAILABILITY

A crucial aspect of nutrient metabolism is its bioavailability and the clinical efficacy of curcumin has been limited due to its poor bioavailability stemming from its instability at low intestinal pH values, and low water solubility.^[21] Also, curcumin undergoes rapid metabolism resulting in conjugation and systemic elimination. Daily doses of up to 12 g in healthy adults have consistently been well tolerated with no dose-limiting toxicity.^[2, 3] However, curcuminoids are hydrophobic, and numerous studies report low plasma and tissue levels even with high-dose supplementation that may be due to poor absorption, rapid metabolism, and rapid systemic elimination.^[21] Despite this, the clinical efficacy of curcumin cannot be denied: even studies that report minimal curcumin absorption have shown significant therapeutic effect.^[3] The challenge is to get curcumin into circulation and usually curcumin is reported to be stable in plasma and even accessible to other tissues in the body such as the brain. Several approaches exist that help improve plasma bioavailability of curcumin and increasing the water solubility of curcumin is suggested to increase bioavailability by multiple folds, up to the order of > 20 folds.^[1, 21, 22]

RHEUMATOID ARTHRITIS

Rheumatoid arthritis (RA) is a chronic inflammatory disease, causing progressive joint destruction, deformity and disability, and that afflicts approximately 1% of the Canadian population.^[23] In a double-blind crossover study of rheumatic patients, 1200 mg/d of curcumin was found to be well tolerated with no side effects, and exerted comparable antirheumatic activity to 300 mg phenylbutazone,

an NSAID commonly prescribed to RA patients.^[24] This condition is characterized by hyperplasia of the synovial fibroblasts due in part to decreased apoptosis,^[25] and synovial inflammation which is mediated through the cyclooxygenase (COX) catalyzed of arachidonic acid into prostaglandins (PG).^[26] Additionally, COX-2 has been shown to downregulate cell apoptosis, exacerbating synovial thickening.^[23] Exposure of synovial fibroblasts to curcumin *in vitro* resulted in decreased fibroblast growth via induction of fibroblast apoptosis, as well as reduced levels of COX-2 and PGE₂,^[22] suggesting a possible mechanism for the role of curcumin in treating patients with RA.

IMMUNOMODULATORY AND CHEMOPREVENTIVE ACTIVITY OF CURCUMIN

Curcumin has demonstrated its chemopreventive potential by inhibiting development and progression, targeting several steps in the pathway to malignancy.^[2] Cancer-specific studies have demonstrated the chemopreventive effects of curcumin in leukemia^[27] and colorectal,^[11, 12, 13] prostate,^[28, 29] bladder,^[30] ovarian,^[29] cervical,^[30] and malignant glioma^[31] cancers.

PROSTATE HEALTH

Prostate cancer is the most commonly diagnosed cancer in men and is the second leading cause of cancer-related deaths in North America.^[26] Conventional medical treatment options — including surgery, chemotherapy, and radiation therapy — have demonstrated limited efficacy, particularly in the advanced stages of the disease, and metastatic disease remains incurable.^[26] Hormone-sensitive tumours respond well to androgen reduction therapy, but hormone-refractory clones are often generated after treatment.^[32] Tumour necrosis factor-related apoptosis-inducing ligand (TRAIL) is a new treatment option for advanced prostate cancer that works by inducing apoptosis in various cancer cell types *in vitro* with little or no cytotoxicity to normal cells, and exhibits antitumour activity *in vivo* without systemic toxicity.^[33] Concomitant supplementation with curcumin increases the sensitivity of hormone-refractory prostate cancer cells to TRAIL, leading to enhanced apoptosis.^[34, 35]

CURCUMIN IS NEUROPROTECTIVE

Strokes are the 3rd leading cause of death in Canada, accounting for 7% of all deaths, and afflicting women more than men.^[36] Ischemic stroke accounts for 80% of all strokes and occurs in two stages: in the first hour of reperfusion following 2 h of occlusion of the middle cerebral artery, the tissue is extensively restored, but secondary deterioration is observed at 4 h after recovery and onwards.^[37] To study the neuroprotective effects of curcumin, cerebral ischemia was induced in rats via thromboembolic occlusion of the middle cerebral artery, and curcumin was administered after 4 h. Intraperitoneal curcumin injections resulted in dose-dependent reductions in cerebral infarct, edema volume, brain neutrophil infiltration, and neuronal reactive oxygen species levels, and aided in the maintenance of glutathione status.^[38] Curcumin supplementation also significantly reduced sensory motor function deficits as evaluated 24 h poststroke.^[38] In another study exploring curcumin's neuroprotective effects, neuronal cells cultured with microglial cells were exposed to dopamine, LPS, and β , three stimuli known to activate microglial cells, causing them to produce inflammatory mediators that induce neuronal cell death.^[34] Dopamine also directly induces apoptosis of neuronal cells, by generating toxic metabolites such as hydrogen peroxide.^[34] It was found that while curcumin failed to protect against dopamine-directed neuronal cell death, it exhibited dose-dependent blockade of the production of inflammation and cytotoxic mediators such as NO, TNF- α , IL1 α , and IL6 produced from β and LPS-stimulated microglia, suggesting that curcumin-mediated neuroprotective effects may be mostly due to its anti-inflammatory activity.^[34]

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