NDC 83295-8000-01 (3.25oz, 92g tube)
(30-Day Supply = 3 Tubes)

Apply 2g to 3g of ointment per treatment.
Apply up to 4 times daily (max 10g per day).

Active Ingredient: Lidocaine 4%

Inactive Ingredients: Cinnamomum, Turmeric, DMSO, Arnica, Boswellia, Aloe, Dimethicone, and Eucalyptus Oil

OTC Cinthera® Ointment contains Lidocaine 4%, Cinnamomum, Turmeric, DMSO, Arnica, Boswellia, Aloe, Dimethicone, and Eucalyptus Oil. This combination of ingredients is recommended for the treatment of acute pain, chronic pain, musculoskeletal pain, neuropathic pain, osteoarthritic pain, arthritis, tendinitis, inflammation, and more. OTC Cinthera® Ointment was designed and formulated using **ODG Evidence-Based Treatment Guidelines** to improve return-to-work outcomes and help patients recover from injury.

Lidocaine 4%
Lidocaine is recommended as a first-line or second-line treatment option for patients with postherpetic neuralgia. – *ODG*
Lidocaine is a local anesthetic that blocks the initiation and conduction of neuronal impulses, including impulses responsible for the perception of pain. (1) (2) (EG 2). – *ODG*
For postherpetic neuralgia, a systematic review and network meta-analysis evaluating the efficacy of topical treatments for postherpetic neuralgia included 3 randomized trials comparing lidocaine with placebo and found that lidocaine was associated with improved pain control compared with placebo. (3) (EG 1). – *ODG*
For postherpetic neuralgia, a systematic review and network meta-analysis evaluating the efficacy of treatment for postherpetic neuralgia included 3 studies comparing lidocaine with either placebo or pregabalin and found that lidocaine was associated with a longer time to discontinuation due to loss of pain relief. – *ODG*

Turmeric – Inactive Ingredient
Turmeric (curcumin) is recommended as an option for pain in patients given its low risk. – *ODG*
Several clinical trials have demonstrated turmeric's antioxidant, anti-inflammatory, and antineoplastic effects. It is considered a viable alternative to nonsteroidal agent for the treatment of inflammation. (1) (EG 2). – *ODG*
Turmeric could be helpful in treating painful inflammatory conditions, such as tendinitis and arthritis, according to a recent study which showed that turmeric prevents interleukins from promoting inflammation. (2) (EG 2). – *ODG*
There are an increasing number of studies supporting the use of turmeric for pain. In a recent study of the use of turmeric for knee osteoarthritis, curcuminoids represented an effective and safe alternative treatment with no adverse effects.
Treatment with turmeric was associated with significantly greater reductions in WOMAC ($p = 0.001$), VAS ($p < 0.001$) and LPFI ($p = 0.013$) scores compared with a placebo. – *ODG*

Turmeric – Inactive Ingredient *(cont'd)*

In a multicenter study of knee osteoarthritis patients, turmeric was as effective as ibuprofen, but with fewer gastrointestinal side effects. – *ODG*
Curcuma longa L., or Turmeric, is an herbaceous, perennial, rhizomatous plant of the Zingiberaceae family. Traditional uses of turmeric (*Curcuma longa* L.) include alleviation of inflammation, better wound healing, and use as an antioxidant, painkiller, and antibacterial compound [113]. Curcumin, a polyphenolic molecule, is responsible for turmeric biological activities [113]. Curcumin can regulate inflammatory cytokines such as interleukin (IL)-1 beta, IL-6, IL-12, Tumor necrosis factor (TNF)-alpha, interferon (IFN) gamma, and associated AP-1, NF-kappa B, and JAK-STAT signaling pathways [113]. Due to the ability to suppress inflammation, it has been used in autoimmune diseases such as rheumatoid arthritis, inflammatory bowel disease, and multiple sclerosis [113]. In preclinical studies, it was demonstrated that curcumin can reduce inflammatory and neuropathic pain [113,114]. In a double-blind, randomized, placebo-controlled trial involving 160 patients with knee osteoarthritis, turmeric extract (4 months, PO) decreased pain as assessed by visual analog scale, and reduced the presence of inflammatory markers in patients' blood [117]. The efficacy of curcumin and diclofenac to alleviate pain was compared in a randomized, open-label, parallel, active controlled clinical trial involving 139 patients with knee osteoarthritis [118]. The severity of pain was evaluated by visual analogue scale score at days 14 and 28. Curcumin had a similar efficacy compared to diclofenac, but demonstrated better tolerance among patients with knee osteoarthritis [118]. Furthermore, in a double-blind randomized placebo-controlled trial involving 72 older adults with osteoarthritis-related knee pain, curcumin 5% ointment (2 × day, 6 weeks) significantly decreased the mean pain intensity [119]. – *Kopustinskiene DM, Bernatonyte U, Maslii Y, Herbina N, Bernatoniene J. Natural Herbal Non-Opioid Topical Pain Relievers-Comparison with Traditional Therapy. Pharmaceutics. 2022 Nov 29;14(12):2648. doi: 10.3390/pharmaceutics14122648. PMID: 36559142; PMCID: PMC9785912.*

DMSO – Inactive Ingredient

DMSO is conditionally recommended for the treatment of CRPS. There is evidence of efficacy for DMSO in the regional inflammatory reaction of neuropathic pain. – ODG
DMSO is recommended for the treatment of CRPS that is sufficient to require medication. DMSO is not invasive, has generally low adverse effects, and has evidence of efficacy in improving pain control. – *ACOEM*

Cinnamomum – Inactive Ingredient

Cinnamon (*Cinnamomum zeylanicum*) is a medicinally important plant-derived essential oil substance with a wide range of biological properties that has been widely used to increase topical drug delivery and effectiveness. The prepared medications could be considered as analgesic drugs for inhibiting the inflammation and pain of diseases. Essential oils (EO)s as secondary metabolites of plants have recently been considered to treat inflammation and pain [11, 12].
For instance, Cinnamon EO (*Cinnamomum zeylanicum*), a spice derived from the inner bark of the genus Cinnamomum trees, has promising inflammatory effects [13, 14]. Some reports regarding Cinnamon's anti-nociceptive and antipyretic effects in bronchitis, rheumatism, cold, fever, headache, and muscular pain [15, 16]. This study developed cinnamon-NG as a topical delivery system.

Cinnamomum – Inactive Ingredient *(cont'd)*

Our work has led us to conclude that these formulations, especially cinnamon-NG, could apply as anti-nociceptive and anti-inflammatory agents or promising therapeutics in relieving diseases accompanied by inflammation and pain. – *Esmaeili F, Zahmatkeshan M, Yousefpoor Y, Alipanah H, Safari E, Osanloo M. Anti-inflammatory and anti-nociceptive effects of Cinnamon and Clove essential oils nanogels: an in vivo study. BMC Complement Med Ther. 2022 May 20;22(1):143. doi: 10.1186/s12906-022-03619-9. PMID: 35596157; PMCID: PMC9123718.*

The effect of cinnamon (Cinnamomum zeylanicum) bark essential oil (CBEO) was investigated with the activity of a commercially available CBEO in a validated human dermal fibroblast system, a model of chronic inflammation and fibrosis. Evaluations were made on the impact of CBEO on 17 protein biomarkers that play critical roles in inflammation and tissue remodeling and genome-wide gene expression. Cinnamon bark essential oil inhibited all the 17 biomarkers that were studied. Cinnamon bark essential oil (CBEO) also showed strong anti-proliferative effects on skin cells and significantly inhibited the production of several inflammatory biomarkers, including vascular cell adhesion molecule-1, intercellular cell adhesion molecule-1, monocyte chemoattractant protein-1, interferon gamma-induced protein 10, interferon-inducible T-cell alpha chemoattractant, and monokine induced by gamma interferon. In addition, CBEO significantly inhibited the production of several tissue remodeling molecules, including epidermal growth factor receptor, matrix metalloproteinase-1, and plasminogen activator inhibitor-1. Macrophage colony-stimulating factor, which is an immunomodulatory protein molecule, was also significantly inhibited by CBEO. Furthermore, CBEO significantly modulated global gene expression and altered signaling pathways, many of which are important in inflammation, tissue remodeling, and cancer biology. The study shows that CBEO is a promising anti-inflammatory agent. The strong inhibitory effect of CBEO on the increased production of these biomarkers indicates that it may have an anti-inflammatory property and, therefore, promote wound healing. The observed strong anti-inflammatory effect of CBEO in the human skin disease model suggests that CBEO may be used for treating inflammatory skin conditions. It was noted that many of the genes and signaling pathways affected by CBEO play critical roles in inflammation, immune response, cancer biology, and DNA damage response.

The overall inhibitory effect of CBEO suggests its potential in regulating the abovementioned biological processes. – *Han X, Parker TL. Anti-inflammatory Activity of Cinnamon (Cinnamomum zeylanicum) Bark Essential Oil in a Human Skin Disease Model. Phytother Res. 2017 Jul;31(7):1034-1038. doi: 10.1002/ptr.5822. Epub 2017 Apr 26. PMID: 28444928; PMCID: PMC5518441.*

Cinnamon (Cinnamomum zeylanicum) bark essential oil (CBEO) has been used for thousands of years in Ayurvedic medicine to soothe aching joints and numb pain. It is still used for similar purposes in India, presumably because of its anti-inflammatory property.

CBEO typically contains a very high amount of cinnamaldehyde and a small amount of eugenol, among many other aromatic compounds. CBEO and cinnamaldehyde have been studied for their antibacterial (Bardají *et al*., 2016), antifungal (Ranasinghe *et al*., 2002), anti-diabetic (Anderson *et al*., 2013; Sartorius *et al*., 2014), anti-inflammatory (Mendes *et al*., 2016; Chen *et al*., 2016), and anticancer (Yang et al., 2015) activities, among others. – *https://pmc.ncbi.nlm.nih.gov/articles/PMC5518441/*