BETACRIN-A®

Benefícios da fitoterapia japonesa na saúde do osso e das articulações

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DESCRIÇÃO

Betacrin-A® é um extrato da casca do fruto da espécie Citrus unshiu M. (Satsuma Mandarin), padronizado em 1% de β-cRIPTOXANTINA.

MECANISMO DE AÇÃO

A β-cRIPTOXANTINA induz a apoptose dos osteoclastos maduros e estimula a expressão gênica de diferenciação e mineralização de osteoblastos, promovendo fortalecimento dos ossos e articulações. Os carotenoides (β-cRIPTOXANTINA) de maneira geral possuem ação antioxidante, que está associada à prevenção ao câncer. Além disso, o Betacrin-A® pode aumentar a conversão da vitamina A em sua forma ativa, retinol, que é oxidada a 11Z-retinal e em seguida é ligado com a proteína opsina, formando assim a rodopsina, que ao receber luz isomeriza a ligação 11Z (cis) para 11E (trans), enviando um impulso elétrico para o cérebro, interpretado como imagem, auxiliando dessa maneira na prevenção da cegueira noturna.

INDICAÇÕES

✓ Coadjuvante em doenças osteoarticulares;
✓ Auxiliar na saúde ocular;
✓ Prevenção ao câncer.

DOSE USUAL

Recomendação oral de 400 a 600mg de Betacrin-A® (Citrus unshiu M. 1% β-cRIPTOXANTINA) por dia.

SUGESTÕES DE FÓRMULAS

**Betacrin-A® (Citrus unshiu 1% β-cRIPTOXANTINA)...300mg**  
MangoSelect® (Garcinia mangostana L. 10% α-mangostina).................................................................100mg  
ActiGin™ (Rosa roxburghii e Panax notoginseng).....50mg  
AstraGin™ (Astragalus membranaceus e Panax notoginseng)..........................................................50mg

**Modo de uso:** 01 dose, uma vez ao dia, duas horas antes do treino.  
**Indicação:** Aumento da performance esportiva e prevenção de danos às articulações.

**Betacrin-A® (Citrus unshiu 1% β-cRIPTOXANTINA)...600mg**

**Modo de uso:** 01 dose, uma vez ao dia.  
**Indicação:** Auxílio na saúde dos ossos.

PRINCIPAIS REFERÊNCIAS


β-Cryptoxanthin and Bone Metabolism: The Preventive Role in Osteoporosis

Bone loss with aging induces osteoporosis. The most dramatic expression of the disease is represented by fractures of the proximal femur. Pharmacologic and nutritional factors may play a role in the prevention of bone loss with aging. β-Cryptoxanthin, a kind of carotenoid, is abundant in Satsuma mandarin orange (Citrus unshiu MARC.). Among various carotenoids including β-cryptoxanthin, lutein, lycopene, β-carotene, astaxanthin, and rutin, β-cryptoxanthin has been found to have a unique anabolic effect on bone calcification in vitro. Hesperidin, which is contained in Satsuma mandarin orange, did not have an anabolic effect on bone calcification in vitro. β-Cryptoxanthin has stimulatory effects on osteoblastic bone formation and inhibitory effects on osteoclastic bone resorption in vitro, thereby increasing bone mass. β-Cryptoxanthin has an effect on the gene expression of various proteins which are related to osteoblastic bone formation and mineralization in vitro. β-Cryptoxanthin has inhibitory effects on enzyme activity which is related to osteoclastic bone resorption, and the carotenoid induces apoptosis of mature osteoclastic cells in vitro. Oral administration of β-cryptoxanthin has been shown to have the anabolic effects on bone components in young and aged rats, and the administration has the preventive effects on bone loss in streptozotocin-diabetic rats and ovariectomized rats in vivo. Moreover, the intake of β-cryptoxanthin-reinforced juice for longer periods has been shown to have both stimulatory effects on bone formation and inhibitory effects on bone resorption in healthy human or postmenopausal women in evaluating with serum biochemical markers of bone metabolism in vivo. Thus the intake of dietary β-cryptoxanthin may have a preventive effect on osteoporosis due to stimulating bone formation and due to inhibiting bone resorption. Moreover, epidemiological studies suggest the potential role of β-cryptoxanthin as a sustainable nutritional approach to improving bone health of human subjects. β-Cryptoxanthin is an important food factor in maintaining bone healthy and in preventing osteoporosis.

Role of carotenoid β-cryptoxanthin in bone homeostasis.

Bone homeostasis is maintained through a balance between osteoblastic bone formation and osteoclastic bone resorption. Aging induces bone loss due to decreased osteoblastic bone formation and increased osteoclastic bone resorption. Osteoporosis with its accompanying decrease in bone mass is widely recognized as a major public health problem. Nutritional factors may play a role in the prevention of bone loss with aging. Among various carotenoids (carotene and xanthophylls including beta (β)-cryptoxanthin, lutein, lycopene, β-carotene, astaxanthin, and rutin), β-cryptoxanthin, which is abundant in Satsuma mandarin orange (Citrus unshiu MARC.), has been found to have a stimulatory effect on bone calcification in vitro. β-cryptoxanthin has stimulatory effects on osteoblastic bone formation and inhibitory effects on osteoclastic bone resorption in vitro, thereby increasing bone mass. β-cryptoxanthin has an effect on the gene expression of various proteins that are related osteoblastic bone formation and osteoclastic bone resorption in vitro. The intake of β-cryptoxanthin may have a preventive effect on bone loss in animal models for osteoporosis and in healthy human or postmenopausal women. Epidemiological studies suggest a potential role of β-cryptoxanthin as a sustainable nutritional approach to improving bone health of human subjects. β-Cryptoxanthin may be an osteogenic factor in preventing osteoporosis in human subjects.

The carotenoid β-cryptoxanthin stimulates the repair of DNA oxidation damage in addition to acting as an antioxidant in human cells.

The role of dietary antioxidants in human health remains controversial. Fruits and vegetables in the diet are associated with lower rates of chronic disease, and this is often attributed to their content of antioxidants, and a resulting protection against oxidative stress. However, large-scale human trials with antioxidant supplements have shown, if anything, an increase in mortality.
We have investigated the biological properties of b-cryptoxanthin, a common carotenoid, in cell culture model systems, using the comet assay to measure DNA damage. At low concentrations, close to those found in plasma, b-cryptoxanthin does not itself cause damage, but protects transformed human cells (HeLa and Caco-2) from damage induced by H2O2 or by visible light in the presence of a photosensitizer. In addition, it has a striking effect on DNA repair, measured in different ways. Incubation of H2O2-treated cells with b-cryptoxanthin led to a doubling of the rate of rejoining of strand breaks and had a similar effect on the rate of removal of oxidized purines by base excision repair. The latter effect was confirmed with an in vitro assay: cells were incubated with or without b-cryptoxanthin before preparing an extract, which was then incubated with substrate DNA containing 8-oxo-7,8-dihydroguanine; incision was more rapid with the extract prepared from carotenoid-preincubated cells. No significant increases were seen in protein content of human 8-oxoguanine DNA glycosylase 1 or apurinic endonuclease 1. The apparent cancer-preventive effects of dietary carotenoids may depend on the enhancement of DNA repair as well as antioxidant protection against damage.

Oral administration of beta-cryptoxanthin induces anabolic effects on bone components in the femoral tissues of rats in vivo.

The effect of beta-cryptoxanthin on bone components in the femoral tissues of rats was investigated. Beta-cryptoxanthin was isolated from Satsuma mandarin (Citrus unshiu MARC.). Bone tissues were cultured for 48 h in serum-free Dulbecco’s modified Eagle’s medium containing either vehicle or beta-cryptoxanthin (10(-7) or 10(-6) M). The presence of beta-cryptoxanthin (10(-7) or 10(-6) M) caused a significant increase in calcium content and alkaline phosphatase activity in the femoral-diaphyseal and femoral-metaphyseal tissues. These increases were completely abolished in the presence of cycloheximide (10(-6) M), an inhibitor of protein synthesis. Thus beta-cryptoxanthin had an anabolic effect on bone calcification in vitro. Moreover, beta-cryptoxanthin (10, 25, or 50 microg/100 g body weight) was orally administered once daily for 7 d to young male rats. The administration of beta-cryptoxanthin (10, 25, or 50 microg/100 g body weight) caused a significant increase in calcium content and alkaline phosphatase activity in the femoral-diaphyseal and femoral-metaphyseal tissues. Femoral-diaphyseal and femoral-metaphyseal DNA contents were significantly increased by the dose of 25 or 50 microg/100 g body weight. A significant increase in metaphyseal DNA content was also seen with the dose of 10 microg/100 g body weight of beta-cryptoxanthin. This study demonstrates that beta-cryptoxanthin has an anabolic effect on bone components in rats in vitro and in vivo.

Prevention of Adiposity by the Oral Administration of β-Cryptoxanthin.

β-Cryptoxanthin (β-CRX) is a carotenoid found in human blood. It is specifically rich in Satsuma mandarin (Citrus unshiu Marc.) but very little in other fruits or vegetables. Several reports indicate the health promoting benefits of β-CRX. As we had reported visceral fat reduction on mildly obese male by the oral administration of β-CRX, a detailed mechanism has not been identified. To identify the mechanism, obese model mouse, TSOD was used in the present study. Oral administration of β-CRX repressed body weight, abdominal adipose tissue weight, and serum lipid concentrations on TSOD mice. The outstanding observation is the significant repression of adipocyte hypertrophy. DNA microarray analysis strongly indicates that the oral administration of β-CRX represses the inflammatory cytokine secretion and improves the lipid metabolism and the energy consumption. It also suggests these effects are partly mediated by PPAR-α, not only lipid metabolism and adipocyte differentiation control but possibly internal circadian clock modulation.
β-Cryptoxanthin Synergistically Enhances the Antitumoral Activity of Oxaliplatin through ΔNP73 Negative Regulation in Colon Cancer.

BACKGROUND: The acquired resistance to chemotherapy represents the major limitation in the treatment of cancer. New strategies to solve this failure and improve patients' outcomes are necessary. The cancer preventive effect of β-cryptoxanthin has been widely described in population studies. Few reports support its putative use as an antitumoral compound. Here we focus on the therapeutic potential of β-cryptoxanthin individually or in combination with oxaliplatin in colon cancer and try to decipher the molecular basis underlying its effect.

METHODS: Apoptosis, viability and proliferation assays, mouse models, and an intervention study in 20 healthy subjects were performed. A PCR array was carried out to unravel the molecular putative basis of the β-cryptoxanthin effect, and further signaling experiments were conducted. Comet Assay was completed to evaluate the genotoxicity of the treatments. RESULTS: β-Cryptoxanthin differentially regulates the expression of the P73 variants in vitro, in vivo, and in a human intervention study. This carotenoid decreases the proliferation of cancer cells and cooperates with oxaliplatin to induce apoptosis through the negative regulation of ΔNP73. The antitumoral concentrations of oxaliplatin decrease in the presence of β-cryptoxanthin to achieve same percentage of growth inhibition. The genotoxicity in peripheral blood mononuclear cells of mice decreased in the combined treatment.

CONCLUSIONS: We propose a putative novel therapeutic strategy for the treatment of colon cancer based on the combination of β-cryptoxanthin and oxaliplatin. The combined regimen produced more benefit than either individual modality without increasing side effects. In addition, the concentration-limiting toxicity of oxaliplatin is reduced in the presence of the carotenoid.

REFERÊNCIAS


