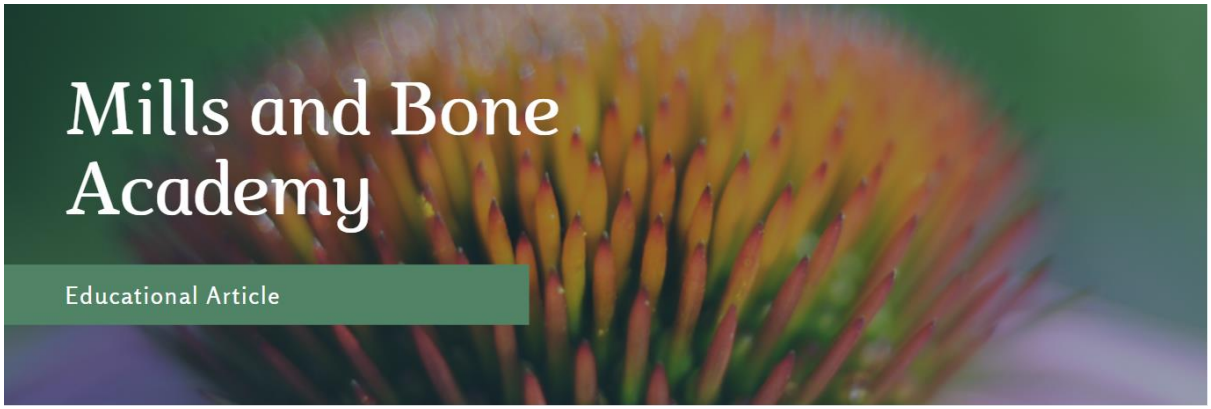

Boswellia: For More than Just Arthritis – Kerry Bone

Boswellia (*Boswellia serrata*) is well known for the treatment of osteoarthritis. Recently, clinical trials using Boswellia for the management of other health conditions have been published, suggesting this traditional Ayurvedic and biblical herb (frankincense) possesses a much broader range of anti-inflammatory effects. The key new studies are reviewed below.

A combination of turmeric (*Curcuma longa*) and Boswellia was investigated in 16 patients with chronic kidney disease, a disorder characterised by increased inflammation.[i] In a small placebo-controlled trial, patients were randomised to receive either the herbal combination (Boswellia extract 516 mg/day (10% 3-acetyl-11-keto-β-boswellic acid, AKBA) and turmeric extract 824 mg/day (95% curcuminoids)) or a placebo (roasted rice powder) for 8 weeks. Baseline levels of key plasma markers (interleukin-6 (IL-6), tumor necrosis factor-α (TNF-α) and serum C-reactive protein (CRP)) indicated elevated inflammation and low antioxidant protection. A significant effect ($p = 0.03$) was observed for IL-6 reduction in the herbal group, indicating a clinically relevant anti-inflammatory action. No significant differences were observed for the other markers, which the authors mainly attributed to the small sample size and/or other drug medication.

Another fascinating pilot trial investigated the value of Boswellia in patients with diffuse axonal injury (DAI), a common consequence of moderate-to-severe head injury.[ii] In total, 38 patients with pure DAI were enrolled in this 12-week, double blind, crossover study. The patients were randomly assigned to receive either capsules of placebo or Boswellia resin at 1080 mg/day for 6 weeks, and then switched to the other intervention for another 6 weeks. The disability rating scale (DRS) was used to assess the outcome at 2, 6 and 12 weeks post-trauma. A non-significant trend for improvement of DRS total scores was observed after the use of Boswellia. In terms of the DRS sub-scores, however, there was significant improvement in 'cognitive ability to self-care' during the second 6 weeks for the group receiving Boswellia.

Malignant brain tumours produce highly active forms of leukotrienes and other inflammatory mediators, causing localised fluid build-up in the brain around the tumour that damages healthy nerve cells. Given the known anti-inflammatory properties of Boswellia, a series of pilot studies investigated

its impact on brain tumour-induced inflammation with positive findings.[iii]

In the most recent and elaborate study to date of Boswellia's anti-inflammatory activity in the brain, 44 patients with primary or secondary malignant cerebral tumours were randomly assigned to radiotherapy plus either 4200 mg/day Boswellia extract or placebo in a double blind trial.[iv] Compared with baseline, and measured immediately after the end of radiotherapy, a greater than 75% reduction in cerebral oedema was observed in 60% of the patients receiving Boswellia versus 26% receiving placebo. This difference was significant ($p = 0.023$), given that the dexamethasone dose during radiotherapy did not significantly differ between groups. The tumor/oedema volume ratio decreased only in the Boswellia group, suggesting an antitumour effect in addition to the antioedema activity. However, progression-free survival did not differ between the groups. Nonetheless, the better tumour response to radiotherapy was an unexpected finding. Common adverse events associated with radiotherapy were similar in both groups, although gastrointestinal discomfort was probably higher in the Boswellia group.

The results of the above clinical research in patients with brain tumours and DAI testify how profound the anti-inflammatory activity of Boswellia can be, as its effects even cross the blood-brain barrier. It also speaks to the fact that this herb has a key role to play in ameliorating the new and fundamental discovery of neuroinflammation, a health phenomenon that has only come under the research spotlight this century. The new insights into neuroinflammation are beginning to help us make sense of previously unfathomable brain disorders, including depression, obsessive compulsive disorder, impulse control disorders, autism, Alzheimer's disease and schizophrenia. Yet the herb has remarkably low toxicity and a low incidence of side effects, with apparently none of the hazards associated with corticosteroids or non-steroidal anti-inflammatory drugs.

There is even now a suggestion that Boswellia is relevant in general pain management, either because of its anti-inflammatory activity, or perhaps by a different mechanism.[v] Twelve healthy volunteers were randomised to receive either a single oral dose of Boswellia (250 mg, presumably of extract) or a matching placebo using a crossover design. Pain was assessed at baseline and at hourly intervals after the medication by applying a mechanical force to the nail bed of the index finger. The single dose of Boswellia significantly increased both the pain threshold force (force at which pain is registered) and time, as well as both the pain tolerance force (maximum force that can be tolerated) and time, compared to both baseline and the placebo. These differences were in evidence at most of the tested times, namely one, two and three hours after the herb's administration.

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