

# **Osteoarthritis – Clinical Outcomes After Uniform, Long – Term Herbal Treatment**

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## **Introduction**

Osteoarthritis or OA, the most common form of arthritis, is a group of condition affecting mainly the synovial joints and characterized by focal loss of articular cartilage with over growth and remodeling of the underlying bone and margin of the joint. It is a multifactorial, metabolically active condition that starts in middle age. The prevalence of OA increases steeply with age.

Osteoarthritis also known under the misnomer ‘degenerative joint disease’ which implies a passive process associated with old age. ‘Joint failure’ is a better term for OA as it emphasizes the pathology of the condition and the fact that osteoarthritis is actually a final and common pathway of many diseases which are set in the joints. OA affects both axial (spinal) and peripheral joints. Another characteristic of OA is calcification of articular cartilage (chondrocalcinosis) which increases with age and is found in both peripheral and axial joints.

## **Aetiology**

OA is a condition of unknown aetiology but the most important factor is the ageing of the connective tissue. Other implicated factors are: an inherited predisposition, abnormal joint loading, biochemical abnormalities of cartilage (e.g. nitric oxide) and most importantly, previous inflammatory joint disease.

## **Clinical features**

The mean age of onset of OA is 55 years (with a wide range).  
Women outnumber men by three to one.

### **The main afflicted joints are:**

- Hands (distal interphalangeal and the base of the thumb)
- Knees
- Hips
- Feet (first metatarsophalangeal joint)

## **Signs & symptoms**

There are no nerve fibres in the cartilage and a few pain receptors in subchondral bone. Most people with OA are asymptomatic. If two or three of the following symptoms occur, OA is very likely. The dominant symptom of advanced OA is pain that worsens with activity and improves with rest. Pain is possibly due to the development of secondary changes in ligaments, raised pressure within the bone or inflammation.

### **Other important symptoms are:**

- Inactivity stiffness (gelling)\*
- Loss of full range of movement
- Cracking of the joints.

*\*In patients with joint disease in the hands, a single blister next to the joint may exude a gel-like, clear substance when the blister is punctured. This is diagnostic for OA, but it does not occur in all patients.*

### **The main signs are:**

- Bony swelling of the joints (due to remodelling of the bone)
- Tenderness (in the joint line or peri-articular spots)
- Small, cool (lacking inflammation) effusions
- Painful limitation of movement
- Joint crepitus (the sensation of bone rubbing against bone, evoked by joint movement) which is not specific to OA.

It is important to locate and record peri-articular and joint tenderness for future external applications of herbal medication.

Radiological examination confirms presence of OA and helps to exclude other bone or joint disease like inflammatory arthropathies, peri-articular soft tissue lesions, Paget's disease of the bone, neoplasia of bone and hypertrophic pulmonary osteopathy.

When the patient does not display characteristics of OA, other possible diagnoses should be considered. These include inflammatory arthritis, crystal deposition disease or spontaneous osteonecrosis.

## **Treatment**

The aim of any therapy in OA should include the following factors, where appropriate:

- Educate the patient, including to reduce anxiety about the disease
- Alleviate the symptoms
- Identify and treat pain-exacerbating factors such as obesity or peri-articular disorder
- Encourage the patient to keep as active as possible without abusing their joints
- Physiotherapy to improve the mechanics of the joints by strengthening the appropriate muscles.

## **Orthodox therapy**

There is no specific disease-modifying orthodox therapy.

The following pharmacological medication may be used to relieve symptoms of disease: analgesics, non-steroidal anti-inflammatory agents (NSAIDs), steroids (administered intra-articularly), antidepressants (possibly as muscle relaxants), chondroprotective agents (glucosaminoglycan polysulphate esters, glucosaminoglycan peptide and hyaluron), prostaglandin E1 analogues.

The chondroprotective agents are favoured in Europe, but are not able to be used in the USA or Australia. Surgery such as artificial joints replacement may also be indicated in certain cases.

## **Botanical therapy**

There is a disease-modifying herbal therapy. Herbal remedies are used to stop progression of the disease and permit regeneration of the cartilage by:

- Increasing blood circulation into the affected area that binds cartilage to the bone
- Supplying carbohydrate molecules for proper proteoglycan synthesis and cartilage reconstitution
- Remineralization of the highly calcified cartilage/bone junction
- Detoxification of joints by absorption of cartilage fragments, hydroxyapatite and calcium pyrophosphate.

Prompt attention is also needed to prevent joint injuries.

Although a large of herbal remedies can be prescribed (due to the emphasis on the patient rather than the disease), the following herbs are used to treat the majority of patients. Some of the major herbs contains salicylates and thus have analgesics and anti-inflammatory activity.

### **Major Internal Herbs**

<i>Cimicifuga racemosa</i>	Black Cohosh (rhizome)
<i>Dioscorea villosa</i>	Wild Yam (rhizome)
<i>Filipendula ulmaria</i>	Meadowsweet (herb)
<i>Fraxinus excelsior</i>	Ash (bark, leaf)
<i>Glycyrrhiza glabra</i>	Licorice (root)
<i>Guaiacum officinale</i>	Guaiacum (root)
<i>Harpagophytum procumbens</i>	Devils Claw (root)
<i>Menyanthes trifoliata</i>	Bogbean (leaf)
<i>Populus tremuloides</i>	Aspen (leaf)
<i>Salix alba</i>	Willow Tree (bark)
<i>Smilax spp.</i>	Sarsaparilla (rhizome)
<i>Solanum dulcamara</i>	Bittersweet (twig)
<i>Solidago spp.</i>	Golden Rod (leaf)
<i>Tephrosia varians or T.rosea</i>	Tephrosia (root)
<i>Zanthoxylum americanum</i>	Prickly Ash (bark)

### **Minor Internal Herbs**

<i>Achillea millefolium</i>	Yarrow (herb)
<i>Agropyron repens</i>	Couch Grass (rhizome)
<i>Aloe spp.</i>	Aloe (leaf)
<i>Arctium lappa</i>	Burdock (root)
<i>Betula alba</i>	Birch Tree (leaf or wood juice)
<i>Boswellia glabra</i>	Indian Olibanum (gum)
<i>Chelidonium majus</i>	Greater Celandine (herb)
<i>Equisteum arvense</i>	Horsetail (herb)
<i>Petroselinum crispum</i>	Parsley (seed)
<i>Rubus idaeus</i>	Raspberry (leaf)
<i>Sambucus nigra</i>	Elder (fruit)
<i>Silybum marianum</i>	Milk Thistle (seed)
<i>Taraxacum officinale</i>	Dandelion (leaf and root)
<i>Trifolium partense</i>	Red Clover (herb)
<i>Urtica dioica</i>	Nettles (herb)

<i>Viola tricolor</i>	Heartsease (herb)
<i>Withania somnifera</i>	Ashwaganda (root)
<i>Zea mays</i>	Corn (stigma)

Raspberry leaf, which is not very often used in OA, is very helpful, particularly in young people, as a preventative remedy.

### **External Herbs**

<i>Aconitum spp.</i> (where legal)	Aconite (root, flowering herb)
<i>Angelica archangelica</i>	Angelica (essential oil)
<i>Armoracia rusticana</i>	Horseradish (root)
<i>Arnica Montana</i>	Arnica (flower)
<i>Avena sativa</i>	Oats (flowering herb-bath)
<i>Capisicum minimum</i>	Chilli (fruit)
<i>Gaultheria procumbens</i>	Wintergreen (essential oil)
<i>Juniperus communis</i>	Juniper (essential oil)
<i>Lavandula officinalis</i>	Lavender (essential oil)
<i>Rosmarinus officinalis</i>	Rosemary (essential oil)
<i>Sinapis spp.</i>	Mustard (seed)
<i>Thymus vulgaris</i>	Thyme (essential oil)

Oats flowering herb, rather than oat straw or oat seed produced successful results, particularly when added to the bath for persistent OA in older patients.

Capsicum is a well known herb for external treatment and there have been a number of clinical trials using the active constituent capsaicin topically in the treatment of osteoarthritis. In clinical trials, topical capsaicin achieved better pain relief than its vehicle and it is believed to reduce the transmission of painful signal from the nerve fibre to the CNS. Capsicum externally is useful for increasing the blood supply to the affected joint.

Essential oils can be rubbed in. There are also supposed to increase the blood supply. Apart from that they are absorbed by the skin and may have a beneficial effect by that route.

### Australian herbs

<i>Acacia cuthbertsonii</i>	bark - externally
<i>Acacia melanoxylon</i>	(Blackwood/Mootchung) roasted bark externally
<i>Alocasia macrorrhizos</i>	(Spoon lily or Cunjevoi) juices – externally
<i>Codonocarpus cotinifolius</i> *	(Desert poplar) root bark – externally
<i>Dendrocnide excelca</i>	(Giant stinging tree) bark – externally
<i>Eremophila fraseri</i>	(Turpentine brush, Burro)leaves – decoction
<i>Raphidophora australasica</i>	leaves – externally
<i>Tephrosia varians</i> or <i>T.rosea</i>	(contains 30% resin) root – internally
<i>Tinospora smilacina</i>	(Snakevine, Ondeundo) stems – externally
<i>Ventilago viminialis</i>	(Supplejack, Barndaragu) roots, bark and ashes – externally and internally

\*contains salicylates

The bark of *Dendrocnide excelca* was used in a similar manner to nettle. *Tephrosia varians* has good literature from the beginning of this century. It was used with very good results by the early settlers and early medical practitioners as well as the Aborigines. It is considered an alternative to Guaiacum resin.

The ashes from burnt root or bark of *Ventilago viminialis* were applied overnight on the joint as a poultice.

### Prevention

Prevention is an important part in the herbal management of OA. An important part of prevention is to treat all joint injuries early and vigorously to induce proper regeneration of the cartilage.

For that, the most helpful external herbs are:

<i>Arnica montana</i>	Arnica (flower)
<i>Codonocarpus cotinifolius</i>	Desert poplar (root bark)
<i>Symphytum officinale</i> (where legal)	Comfrey (leaf,root)
<i>Thymus vulgaris</i>	Thyme (essential oil)

**Table 1: Details of outcome of botanical Therapy for OA patients**  
**Patient Group Results**

**First group (36)**

Various herbal medication without anti – arthritic herbs

After 6 years – 22 (61.1%) on analgesics or NSAID with worse outcome measures.

**Second group (48)**

Harpagophytum procumbens 1:2

Cimicifuga racemosa 1:2

Zanthoxylum clava-herculis 1:2

Betula pendula 1:2

In equal parts, dose 5 ml once a day

After 6 years – 12 (25%) on analgesics or NSAID with worse outcome measures.

**Third group (33)**

Harpagophytum procumbens 1:2

Cimicifuga racemosa 1:2

Zanthoxylum clava-herculis 1:2

Betula pendula 1:2

In equal parts, dose 5 ml twice a day

After 6 years – 8 (24.2%) on analgesics or NSAID with worse outcome measures.

**Fourth group (44)**

Harpagophytum procumbens 1:2

Cimicifuga racemosa 1:2

Zanthoxylum clava-herculis 1:2

Betula pendula 1:2

Guaiacum officinale 1:10

In equal parts, dose 5 ml once a day

After 6 years – 9 (20.5%) on analgesics or NSAID with worse outcome measures.

### **Fifth group (49)**

Harpagophytum procumbens 1:2  
Cimicifuga racemosa 1:2  
Zanthoxylum clava-herculis 1:2  
Betula pendula 1:2  
Guaiacum officinale 1:10

In equal parts, dose 5 ml twice a day

After 6 years – 7 (14.3%) on analgesics or NSAID with worse outcome measures.

### **Sixth group (37)**

Harpagophytum procumbens 1:2  
Cimicifuga racemosa 1:2  
Zanthoxylum clava-herculis 1:2  
Betula pendula 1:2  
Tephrosia spp. 1:5

In equal parts, dose 5 ml twice a day

After 5 years – 4 (10.8%) on analgesics or

If you have a patient with OA the best time to start treatment is as early as they appear on your doorstep.

Herbs that promote internal remineralization are particularly beneficial when used with external treatment to help develop strong bone and early repair of cartilage especially in young people.

### **The following herbs can be used to promote remineralization:**

<i>Agropyron repens</i>	couch grass (rhizome)
<i>Betula alba</i>	birch tree (leaf)
<i>Equisetum arvense</i>	horsetail (herb)
<i>Taraxacum officinale</i>	dandelion (leaf and root)
<i>Urtica dioica</i>	nettle (herb)

When peri-articular changes are present, the addition of *Rubus idaeus* (raspberry leaf) in the dosage of 7-10g dry herb equivalent per day for a week (in those over 40 years old) and for two weeks in others, should result in complete recovery. The use of raspberry extract over two weeks resulted in the peri-articular changes disappearing, as confirmed by X-ray.



## **Patients and Results**

The treatment results for 247 female patients from the total pool of treated patients with OA (more than 2000) were selected for analysis on the basis of uniformity herbal treatment. The group ranged in age from 38 to 78 years of age (median age 61.4) and had a variety of other medical condition for which they were taking various medication. The patients received no antirheumatic orthodox treatment for a minimum of 2 years from the beginning of herbal therapy, which was undertaken (daily) for a minimum of six months of each year. They were under continuous observation for 5 to 6 years.

The following outcome measures were tested: changes in symptoms (pain and stiffness); changes in joint movement; changes in function (walking time) and changes in health perception. Changes in joint anatomy which requires radiology were not tested, as not all patients had X-rays conducted.

Refer to Table 1 and Figure 1 for results of the treatment of these patients.

## **Conclusion**

Herbal therapy positively modifies outcomes in more than 75% of patients with osteoarthritis. The herbs used prevented analgesics medication, decreased pain and stiffness of joints, increased joints movement, improved the function of the joints and improved perception of health. This is evidenced by patients walking better and for longer distances.

A dose-dependent relationship was generally observed. As the dose was increased, there was a decrease in the percentage of patients on analgesics or NSAIDs. Moreover, as dosages of individual herbs were increased to be within recommended dosage ranges, an improvement in clinical outcomes was observed.

The Australian herbs, *Tephrosia varians* and *Tephrosia rosea* can be used with therapeutic benefit in joint failure.

Dr. Kielczynski has been practising herbalism since 1976, first in Poland and then in England. He currently works in Australia, caring for a Polish community of 25,000 people. From 1985 until 1993 he held the position of Senior Scientist in immunology at the Walter and Elisa Hall Institute in Melbourne. Dr. Kielczynski was a founding member of the Traditional Medicines Evaluation Committee.

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