

Chanchal Cabrera MSc, FNIMH, AHG

Herbs for Arthritis

© Chanchal Cabrera MSc, MNIMH, AHG

Overview

Arthritis may be defined as joint disease associated with inflammation and leading to pain, stiffness and loss of function. There may also be swelling of the joint.

Over 80 different diseases may cause arthritis, and there are correspondingly many different types of arthritis. A complete history and examination is important when arthritis is suspected because it may be a part of a systemic disease process. As well as physical examination of the joints for heat, redness, stiffness, swelling, deformity and loss of function, there are various other useful examination techniques that may be employed.

- * Imaging techniques such as X ray, MRI etc.
- * Non-specific blood tests such as ESR and Hb.
- * Analysis of the aspirated synovial fluid from affected joints.
- * Immunological tests for antibodies such as rheumatoid factor and anti-nuclear factor both of which point to underlying auto-immune problems. The terms seronegative and seropositive refer to the presence or absence of RF from the blood.



nature does nothing uselessly.

aristotle

(384 to 322 bc)



RHEUMATOID ARTHRITIS

This is a chronic, inflammatory, destructive and deforming polyarthritis which may affect many parts of the body but especially the synovial joints. Somewhere between 1 and 3 % of the population is affected with three times as many women as men. The peak age of onset is around 40 years although it can occur at any age.

The aetiology is unknown although 10% of sufferers have a positive family history of RA. and it is commonly associated with several auto-immune conditions especially chronic inflammatory bowel diseases. Allergies are often a co-factor, especially to dairy, wheat and sugar. Interestingly, RA appears to be a recent disease, it was unknown in medical literature before 1800.

Pathology

RA causes an increase in the number, size and activity of the synovial lining cells. They secrete an excessive amount of synovial fluid and as the synovial membrane becomes overgrown so a local inflammation occurs. Thus leucocytes accumulate and there is heat, redness, swelling and pain in the joint. Eventually hypertrophy of the synovial membrane develops into a pannus or layer of inflammatory tissue that grows across the joint surface and

eats into the cartilage and bone at the joint edges. Ultimately fibrosis and tissue necrosis will set in, causing severe pain and loss of function.

In about 30% of patients there will develop subcutaneous nodules at pressure points (elbows, knees, wrists etc.) and sometimes on internal organs (eye, lung etc.). These consist of a central necrotic area with surrounding layers of cells and an outer capsule of lymphocytes and plasma cells.

Clinical Features

10 - 15% of patients experience an acute onset, with sudden pain and inflammation in several joints. More usually, though, there are weeks or even months of general malaise, weight loss and low fever before arthritis occurs.

Joints are usually affected symmetrically, most commonly beginning in the hands (especially the proximal interphalangeal and the metacarpophalangeal joints) or feet then spreading to affect other joints as well.

The symptoms are pain, heat, swelling and stiffness in the affected joints, worse in the morning and after resting (ie. improved by activity).

Over the course of time there may be remissions and exacerbations, but the general trend is a progressive worsening. Occasionally a spontaneous recovery will occur, this being paradoxically more likely when the onset was sudden and acute. As well as the nodules, there are usually other extra-articular manifestations of RA:

Common:

- Dry, gritty eyes & iritis
- Lymphadenopathy
- Pleural effusion
- Skin ulceration
- Carpel tunnel syndrome
- Muscle wasting

Less Common:

- Thinning of the sclera
- Pulmonary nodules
- Pulmonary fibrosis
- Pericardial effusion
- Splenomegaly
- Peripheral neuropathies

Note also that most people with RA also have anaemia, possibly because they are making extra leucocytes at the expense of erythrocytes.

The Allopathic Treatment of Rheumatoid Arthritis

- * Non-steroidal anti-inflammatories (eg. Aspirin, Indomethacin or Ibuprofen). Common side effects include GIT disruption, fluid retention, dizziness, vomiting and impaired blood clotting. NSAID's also inhibit collagen matrix synthesis and thus impair cartilage repair. Because of this they may in fact cause an overall worsening of the condition.
- * Gold salts, orally or by injection. Appears to modify the disease process and inhibit inflammation. Common side-effects include mouth ulcers, itching, blood disorders and inflammations of colon and kidney.
- * Steroidal anti-inflammatories (cortisol or hydrocortisone). Common side effects include adrenal disruption and

Cushing's Syndrome.

Surgery to replace joints is a last resort.

OSTEO-ARTHRITIS (Degenerative joint disease)

This is the most common of all the joint disorders and affects as many as 80% of people over the age of 50 although only about 1/4 of these will have symptoms.

There are 2 main types of OA: primary OA develops as a result of normal wear and tear with no apparent triggering factor. Secondary OA is associated with some pre-disposing factor such as trauma to a joint or a set of joints from injury or repetitive movements, congenital joint abnormalities allowing excessive joint mobility, crystal or toxin deposition, growth of abnormal cartilage or previous inflammatory joint disease.

There may also be a genetic predisposition because it frequently runs in families although this could also reflect lifestyle habits that are passed from one generation to the next. Typically OA affects only one joint or the set of joints responsible for a particular movement, and does not cause symptoms in other systems of the body. OA is very often accompanied by painful swelling and stiffness of the distal interphalangeal joints (Heberden's nodes).

Pathology

Progressive changes in the biochemical make up of the hyaline cartilage is brought about by any of the above etiological factors. Over time this leads to extensive loss of cartilage volume and ultimately to friction in the joint as bone rubs on bone. In an attempt to stabilise the joint, the joint capsule will become thickened and fibrotic and osteophytes (bony spurs) will grow around the joint. This will lead to impairment of movement and pain.

Clinical Features

Joint involvement is asymmetrical and may be limited to only one joint or may affect multiple joints. Typically the onset is gradual, with progressively worsening joint pain, exacerbated by exercise and somewhat relieved by rest. There is commonly morning stiffness that usually lasts less than 30 minutes. As the disease progresses there is a loss of range of motion in the affected joint(s) and frequently there is **crepitus** and a grating sensation with movement. There may be swelling as the joint capsule and surrounding tissues proliferate to try and stabilise the joint, but there is rarely heat or redness unless the damage causes actual inflammation. Eventually osteophytes will grow, causing derangement of the joint and severe pain on movement. The symptoms are often sensitive to changes in the weather and there may be aching in the joint when there is cold or wet weather.

OA of the cervical or lumbar spine is relatively common and may cause secondary symptoms as nerve roots are compressed.

Typically in OA the ESR is normal and the blood is sero negative.

The Allopathic Treatment of Osteo-Arthritis

The usual treatment is palliative only, consisting of pain killers, non-steroidal anti-inflammatories and occupational therapy/rehabilitation to teach the person to live more easily with their disability. Surgery may be used as a last resort.

COMPARISON OF THE MAIN FEATURES OF

	RHEUMATOID ARTHRITIS	OSTEOARTHRITIS
Type	Inflammatory (Auto-	Degenerative

	immune)	
Sex	M:F - 1:3	M:F - 1:1
Age	20-60	50+
Joints affected	Metacarpophalangeal Proximal interphalangeal Carpel bones Metatarsophalangeal Usually symmetrical	Distal interphalangeal Hips Knees Spine Usually unilateral
Symptoms	Often systemic disturbance, fever, malaise, pain, swelling, loss of movement. Pain and in several joints. Better with movement	No systemic disturbance Usually only 1 joint affected Worse after movement.
Blood	Often anaemia	Hb. Normal
picture	Raised ESR 80% RF +ve	ESR normal RF -ve
Synovial	Cloudy	Clear
aspirate	Increased viscosity WBC	Reduced viscosity Cartilage fragments
Other features	Systemic extra-articular involvement	Heberden's nodes

TREATMENT STRATEGIES

As a practitioner you should try first to determine which type of arthritis your patient has (don't forget that he or she may actually suffer from OA and RA at the same time!). This is important because if it is OA you may want, for example, to encourage weight loss or to teach new ways of using the body, whereas if it is RA you may wish to consider allergies as a causative factor, or to use immuno-modulators. Having determined the type of arthritis you can investigate the causative factors and begin to treat them.

TOXICITY CONDITIONS

Bodily misuse, overweight and allergies are significant factors in many patients, but the single most important cause in most arthritis patients is toxicity and poor circulation. Very many patients with arthritis also suffer from some degree of constipation, and their kidneys and sweat glands often do not function optimally. Eliminative functions are inhibited and toxins accumulation in the body. Acid wastes predominate and these tend to precipitate out in the joints where they aggravate or may even initiate arthritic changes. In this case the alterative type of herbs are particularly appropriate in assisting the removal of toxins from the body. **Rumex crispus, Arctium lappa, Taraxacum off. radix, Smilax spp.** and **Berberis vulgaris** are the herbs of first choice. Laxatives and bowel tonic herbs may also be indicated.

Circulatory stimulants such as **Zanthoxylum spp.** or **Capsicum minimum** can encourage sweating at the same time as increasing

blood flow so that toxins can be flushed away from affected joints. Diaphoretics may also be used eg. **Sambucus niger**, **Achillea Millefolium**, **Nepeta cataria** or **Eupatorium perfoliatum**.

If perspiration continues to be inhibited then the following regime may help: Put 2-4 lbs. of epsom salts (Magnesium Sulphate) in a bath of water as hot as can be borne. Soak in it for 10-15 mins. using a stiff brush under water on the affected joints. Get out of the bath and, still wet, wrap up in an old sheet. Go to bed with a hot water bottle and lots of blankets. This will promote diaphoresis and in the morning the sheet can be stained yellow with drawn out toxins. The regime can be repeated fortnightly until the sheet remains clean. Epsom salt soaking can also be done locally eg. for the hands or feet only and this is recommended daily or on alternate days.

Diuretics may be appropriate, especially those that encourage the excretion of acids from the body eg. **Betula alba**, **Apium graveolens** and **Petroselinum crispum**.

DIET

To remove toxins from the body a cleansing program is strongly recommended. The best fast to undertake are white/green grapes or vegetable juice (carrot, beet, celery, parsley). This should be followed for as long as can be tolerated, at least 3 days and preferably 1 week. Note that a fast should probably not be attempted by anyone without prior consultation with a qualified natural health practitioner.

As well as removing toxins this will assist in weight loss and also provide a mechanism by which the person can test out for allergies as foods are gradually reintroduced.

The main toxins deposited in the joints are acidic and nitrogen-containing (urea, uric acid, pyrimidines & purines). For reasons that are not yet known, these tend to be deposited in adipose tissue and at the ends of long bones where they form a septal focus and lead to slow, festering, chronic inflammation. The acids and nitrogen-containing substances are formed from the digestion of animal proteins (all meats, sea food & dairy products). Certain foods seems to be worse than others eg. pork is worse than chicken, milk and cheese are worse than yoghurt or butter and seafood appears to be the worst of all. Other acid forming foods are wheat (especially refined flour products), sugar, tea and coffee, alcohol, vinegar (except apple cider), pickles, processed and tinned foods, tomatoes, rhubarb, gooseberries, red and black currants, cooked spinach, margarine and all processed fats, eggs, chocolate, cod liver oil and peanuts.

Thus a **maintenance diet** will avoid all of the above foods and concentrate on fresh fruits and vegetables with limited amounts of cereal/grain, occasional fish and chicken and no processed or artificial foods at all. Bernard Jensen recommends the following foods in particular: sesame seeds, kale, celery, green beans, artichoke, okra, collards, watercress, lettuce, garlic, onions, turnip greens, barley, almonds, black mission figs, cherries, pineapple, raw goats milk, goats whey and olive oil.

The following juices have been found to also be beneficial as part of a maintenance diet: black cherry; celery & parsley; celery & apple; cucumber, endive, & goats whey; fig and goats milk.

In the case of OA there is much anecdotal evidence to support the theory that foods from the *Solanaceae* family contribute to joint pathology. They appear to inhibit normal collagen repair and to aggravate joint inflammation. Thus it is useful for people with OA

to avoid potatoes, tomatoes, eggplant, peppers, cayenne and tobacco. Many people with RA appear to be especially sensitive to citrus fruits so these should be allergy tested early in the program. In principle oranges, lemons, limes and grapefruits should be kept to minimum.

Sample Diet for Arthritis

Breakfast

Lemon juice and water on rising.

Cooked or raw fruit or a cereal breakfast such as porridge or muesli, eaten with nut, rice or soya milk and maple syrup.

Herb tea.

Lunch

Cooked or raw vegetables, especially those emphasised above by Bernard Jensen.

One serving of starch (wholegrain pasta, bread, rice, millet etc) or one serving of protein (nuts, beans, fish, tofu).

Herb tea.

Dinner

Cooked or raw vegetables as above.

One serving of protein as above.

Herb tea.

Snacks

Fresh fruit (not within 1 hour before or 2 hours after eating anything else).

Non-wheat crackers (rice cakes, rye crisps, oat cakes etc.) with nut butter or tahini.

Vegie sticks or fresh vegetable juices.

Other Dietary Measures

- * Eat slowly and chew all foods very well.
- * Eat only until just comfortable, always leave the table feeling that you could eat more.
- * Drink before or between meals, not with or soon after eating. Diluting the digestive juices will reduce the digestive fire and may predispose to indigestion and to the absorption of partially digested proteins thus aggravating allergic reactions.
- * Water should be drunk in the approximate ratio of 1 glass for every 20 lbs. of body weight. Water should be filtered or spring source and should be drunk at room temperature.
- * Avoid mixing starch and protein at the same meal. They require different pH ranges for optimum digestion and may be poorly digested if eaten together.
- * Only one normal or 2 small servings of protein a day, mostly vegetable source except fish 2 - 3 times a week if desired.
- * Dairy should generally be avoided except a little butter, cottage cheese or yoghurt.
- * The only sweeteners should be honey, maple syrup and rice syrup.

After an initial fast as described above, it is a good idea to do a 'mini cleanse' every month. This should consist of a day of raw foods only, a day of juice fasting and another day of raw foods. This will serve to ensure that the eliminative channels remain open._

SUPPLEMENTS FOR ARTHRITIS

Niacinamide

High doses of niacinamide (900 - 4000 mg. daily in divided doses) has proven to be significant in reducing arthritic inflammations. However, doses this high can cause serious side effects including glucose intolerance and liver damage and should not be taken without medical supervision.

Methionine

This is a sulphur-containing amino acid which is incorporated into cartilage and can thus act to improve the strength and integrity of the joint in OA. It is best taken in combination with choline as *Lipotropic factors* to a dose of 1 gram of each per day. This will also help to enhance liver function and the cleansing process.

Superoxide dismutase

This is free radical scavenger and powerful anti-oxidant that is especially useful in RA and OA. Unfortunately clinical trials have suggested that the orally administered form is poorly absorbed and that it is best taken intra-venously,

Vitamin E

This vitamin has an anti-inflammatory action due to its effect on prostaglandin and leukotrine formation and it acts synergistically with other anti-oxidants as a free radical fighter. It inhibits the enzymatic breakdown of cartilage and stimulates cartilage synthesis. It should be taken to 400 - 600 iu./day.

Vitamin C

As an essential nutrient for tissue repair, any deficiency of vitamin C will lead to poor healing of cartilage. In combination with vitamin E, this vitamin will enhance the stability of the sulfated proteoglycans that make up cartilage and strengthen the tissue. It should be taken to bowel tolerance.

Eicosapentaenoic acid (EPA)

Supplementing the diet with fish oils that provide EPA enhances the formation of anti-inflammatory prostaglandins (PG3 series) and inhibits the formation of the inflammatory leukotrienes. Clinical trials have shown that 1.8 grams per day was an effective dose.

Gammalinolenic acid (GLA)

This is the active constituent of oil of Evening Primrose and acts in the body in a very similar way to EPA. By enhancing the production of anti-inflammatory prostaglandins (PG 1 & 2 series) Evening Primrose oil minimises arthritic pain. A dose of 2 - 3 grams per day is usually effective.

Zinc

This is another anti-oxidant that is frequently low in people with RA. It is also essential for tissue repair. A supplement of 25 - 50 mg./day in a chelated form may be helpful.

Manganese

This is a co-factor for SOD and is often low in people with RA and OA. Supplementing with manganese at a dose of 15 mg./day.increases SOD activity and thus minimises free radical damage.

Betaine Hcl and proteolytic enzymes

These may be especially useful in people with RA where there are associated food allergies and impaired digestive function. By augmenting the body's own digestive juices the allergenic component of arthritis may be minimised.

Bromelain

A digestive enzyme extracted from papaya and pineapple that serves to reduce soft tissue swelling and pain. 2 - 4 tablets three times daily is usually indicated.

Selenium

This is a powerful free radical scavenger and anti-oxidant that appears to work synergistically with vitamin E and is a co-factor for *glutathione peroxidase*. It also inhibits the production of leukotrienes. Serum levels of selenium are usually low in people with RA and this suggests that it is useful to supplement with 200 mcg./day.

HERBS FOR ARTHRITIS

Alteratives

These are herbs which act as stimulants to the basic processes of metabolism so that all functions of the body are enhanced. They have a particular role to play in stimulating the elimination of any morbid matter from the tissues and, as such, are often referred to as 'blood cleansers' or 'depuratives'. Although there are many different alteratives with specific effects upon various parts of the body, they generally all act via the liver, gall bladder and kidneys.

Alteratives particularly acting in the musculoskeletal system:

Rumex crispus (Yellow dock)

Berberis vulgaris (Barberry)

Phytolacca spp. (Pokeroot)

Arctium lappa (Burdock)

Urtica dioica (Nettle)

Fucus vesiculosus (Kelp)

Galium aparine (Cleavers)

Diuretics

A great many herbs are considered diuretic although only a few of them are truly strong enough to produce increased urine output in a normal, healthy kidney. Several diuretics are especially effective in encouraging the elimination via the kidneys of uric acid. This is of great benefit in treating arthritis.

Diuretics which encourage uric acid removal:

Apium graveolens (Celery)

Petroselinum crispum (Parsley)

Betula alba (Birch)

Anti-inflammatories

Inflammation is a normal bodily response to injury or irritation and simply suppressing it will often do more harm than good as the body's own healing response is inhibited. Herbal anti-inflammatories do not inhibit the bodily reactions but actually nourish and support the body in its attempt to deal with the

problem.

The mode of action of herbal anti-inflammatories is only partially understood. There are 5 basic groupings based on known chemical constituents although the isolated extracts only rarely seem to have anti-inflammatory properties.

1) Salicin-containing herbs

All the many salicylate compounds in herbs are converted in the body into salicylic acid which inhibits the enzyme cyclo-oxygenase that converts arachidonic acid to inflammatory prostaglandins. This provides a general anti-inflammatory effect akin to the effect of aspirin (another salicylate compound). Note that, unlike aspirin, there is no damage to the gastric mucosa from willow or other high salicylate herbs.

Eg.

Salix spp. (Willow)

Populus spp. (Poplar)

Filipendula ulmaris (Meadowsweet)

Viburnum prunifolium (Black haw)

2) Saponin-containing herbs

Saponins are plant chemicals that have a steroid (cholesterol based) skeleton. Taken into the body, they may act to promote the production of the natural anti-inflammatory cortisol from the adrenal glands or may act more directly in the inflamed joints as an anti-inflammatory.

Eg.

Glycyrrhiza glabra (Licorice)

Dioscorea villosa (Wild yam)

Cimicifuga racemosa (Black cohosh)

3) Volatile oil-containing herbs

The exact mode of action of these is not clearly understood but, for example, the bisobolal and the chamaezulene in the volatile oil of *Chamomilla recutita* are known to be anti-inflammatory.

4) Essential fatty acid-containing herbs

Omega 3 and omega 6 fatty acids have a regulating and normalising effect on prostaglandin formation to diminish leukotrine production and reduce inflammation.

Eg. Evening primrose, blackcurrant or borage seed oils.

5) Resin-containing herbs

Plant resins are sometimes anti-inflammatory, especially to the joints

Eg.

Harpagophytum procumbens (Devil's claw)

Menyanthes trifoliata (Bogbean)

Guaiacum officinalis (Arbor vitae)

Demulcents, by their soothing of inflamed tissues, may also act in an anti-inflammatory way.

Circulatory stimulants

By encouraging blood flow to the affected area, white blood cells are provided to fight infection and reduce inflammation and haemoglobin delivers oxygen to reduce free radical damage aid tissue healing. Inflammation itself promotes blood flow to the area (hence the redness, heat and swelling) but, especially in the case of chronic osteoarthritis, it may be useful to enhance this process.

Circulatory stimulants of particular benefit to the musculoskeletal system:

Capsicum minimum (Cayenne)

Zanthoxylum americanum (Prickly ash)

Zingiber off. (Ginger)

Myrica cerifera (Bayberry)

Rubefacients:

These are herbs which, if applied topically, will greatly enhance blood flow into the affected area and thus act in a similar way to the circulatory stimulants. They are particularly beneficial in the treatment of joint disease because internal joint surfaces are actually avascular and thus less effectively treated from inside.

Examples: Capsicum minimum (Cayenne)
Zingiber off. (Ginger)
Brassica alba/niger (Mustard)
Gaultheria procumbens (Wintergreen)
Juniperus communis (Juniper)

Immuno-modulators

In the case of an inflammatory process the immune system is under stress and may need herbal support. This is especially so in rheumatoid arthritis which is actually an auto-immune and/or allergenic disease and thus directly involves the immune system in the etiology of the disease. Immuno-modulating herbs are neither specifically stimulant or suppressive to the immune system, but act in an amphoteric way to balance and regulate all immune functions.

Immuno-modulators especially useful to the musculoskeletal system: Galium aparine (Cleavers)
Phytolacca spp. (Pokeroot - should only be used by professional herbalists)
Panax spp. (Ginsengs - especially Eleutherococcus senticosus [Siberian ginseng])

Collagen tonics/regulators

These herbs may serve to strengthen and nourish the tissues of the joints, probably through the provision of anti-oxidant bioflavonoids.

Examples:

Crataegus oxycanthoides (Hawthorn) (berries)
Vaccinium myrtillus (blueberries)
Yucca leaves

Analgesics

These are herbs that are applied internally to reduce pain. Most of them work by depressing functions of the central nervous system and, as such, are potentially toxic and should not be used by persons not trained in herbal medicine.

Analgesics that may be useful in the musculoskeletal system:

Piscidia erythrina (Jamaican dogwood)
Eschscholzia californica (California poppy)
Lactuca virosa (Wild lettuce)

Valeriana off. (Valerian)

Topically Aconitum napellus (Monkshood) and Capsicum minimum (Cayenne) are powerful anodynes. Aconite numbs peripheral nerve endings and reduces the sensation of pain and cayenne reduces the release from injured tissues of substance P which is a mediator of the pain response.

TYPICAL FORMULAS FOR ARTHRITIS

Osteo Arthritis:

Menyanthes trifoliata	25
Harpagophytum	25
procumbens	25
Zanthoxylum	qs
americanum	<u>7</u>
Apium graveolens	100
Valeriana off. (1:1)	ml.

sig. 5ml. tid. aq.cal. a.c.

Osteo Arthritis:

Harpagophytum pro	25
Guaiacum off	25
Betula alba	15
Capsicum min.	10
Berberis vulgaris	<u>25</u>
	100
	ml.

sig. 5 ml. tid aq.gel. a.c

Osteo Arthritis:

Menyanthes trifoliata	20
Equisetum arvense	20
Bryonia alba	10
Taraxacum off. radix	20
Zanthoxylum	15
americanum	<u>15</u>
Harpagophytum pro	100ml

sig. 5 ml tid aq. cal. a.c.

Rheumatoid Arthritis:

Salix alba (1:1)	20
Cimicifuga racemosa	20
Betula alba	20
Echinacea spp	20
Zanthoxylum spp	<u>20</u>
	100ml
sig. 5 ml. tid c aq. fr.	
a.c.	

Rheumatoid Arthritis:

Menyanthes trifoliata	
Urtica dioica	25
Apium graveolens	18
Filipendula ulmaris	25
(1:1)	25
Valeriana off	<u>7</u>
	100ml.
sig. 5 ml. tid aq. gel.	
a.c.	

Bryonia dioica (White bryony) is a vine from southern Europe the roots of which contain alkaloids and a glycosidal resin which reduce

central nervous system responses to pain. Bryony is specifically indicated for inflammations of the serous (wet) membranes of the body - the pleura, the pericardium and the synovial joints. It appears to act as a tonic and regenerator of these tissues.

Because synovial joints are made of connective tissue, they can be nourished and strengthened by silica in the form of biochemic tissue salts or Equisetum arvense (Horsetail).

TOPICAL APPLICATIONS FOR ARTHRITIS

There are many topical treatments which may be of assistance in the treatment of OA and RA. These may be applied in the form of fomentations/poultices or as a bath, lotion, plaster or ointment.

- * Kelp and Capsicum plasters
These are rubefacient, counter-irritant, nourishing and vulnerary for the joints. Made by evaporating the alcohol out of cayenne tincture over a water bath, adding powdered kelp and melted beeswax and then soaking strips of cotton bandage in the resulting liquid. These are laid out to dry on newspaper and stored carefully because they are brittle. Before use they are warmed over a radiator so they may be

gently wrapped around the affected joint. They should be covered over with saran wrap and a heating pad applied. Check frequently for excessive reddening of the skin and be sure to remove before any blistering could occur.

- * **Warming embrocation**
Mix together 500 mls. each of the infused oils of Juniperus and Comfrey. Add 15 mls. each of the following essential oils: Juniper, Wintergreen, Marjoram and Black Pepper. Apply over the affected joints as required. For added potency one of the infused oils may be made in castor oil which penetrates deeply into the underlying tissues.
- * **Russian ointment**
Melt together 150 ml. of sunflower oil and 65 grams of grated beeswax. Add 110 grams of lanolin and allow to cool slightly. To this add 5 grams of camphor powder dissolved in 75 ml. of turpentine oil. Now add 30 ml. methyl salicylate, 10 ml. of capsicum tincture forte (made by evaporating alcohol off over a water bath), 35 ml acetic acid 25% and 5 grams borax powder. Stir well, pour into jars and allow to set. Apply to joints as needed.
- * **Analgesic and anti-inflammatory liniment**
To 100 mls. of infused oil of Comfrey add 50 mls. each of tinctures of Lobelia and Viburnum opulus and 20 mls. of essential oil of Wintergreen. Apply to the affected area with friction.
- * **Hayseed poultice**
Hayseed (available from farm supply stores) retains heat very well and so warms the underlying tissue when applied with moist heat to the skin. It also contains volatile oils and coumarins which themselves are rubefacient and anti-inflammatory. The poultice should be prepared by placing hayseed in a linen bag or wrapping in a piece of muslin.

This is then soaked for 10 mins. in a pan of freshly boiled water, the excess water squeezed out and the poultice placed over the affected area. It can then be covered with saran wrap and a heating pad and left in place for up to one hour.

For a poultice consider using potato powder as the binding agent because it draws fluid to the surface of the body and so is an anti-inflammatory. Thoroughly moisten it with teas or tinctures of any of the above herbs depending on the desired action. Place the resulting paste in a piece of muslin and place over the part affected. Cover with saran wrap then a heating pad or hot water bottle and leave in place for one hour. Repeat daily.