

Managed by:

Counter-irritants

- relieve pain by stimulation of a- & B- nociceptive receptors
(**Gate control theory**)

- Irritant skin to distract from muscle and joint pain

Rubefacients

- Vascular agents causing **vasodilation**/redness to cleanse area of any harmful substances and nourish it.

Rubefacients & counter-irritants

Oil of wintergreen

Phenolic glycoside (gaultherin)--> enzymatic hydrolysis (maceration or steam distillation)---> **methyl salicylate**

Mainly as ointment or liniment for rheumatism, sprains

Skin irritant.

Oil of turpentine (longleaf pine)

From **oleoresin distillation**

Contains monoterpenes (**a- and B- pinene**)

Used externally as rubifacient & counter irritants ointments and liniment, but not for more than 3-4 times daily. (skin irritant)

Can cause **sever airway spasms in asthma**. Swallowing causes headache, coughing, lung bleeding, kidney damage due to A.I. pinenes, 3-carene and dipentene.

Capsaicin

Pungent oleoresin.

Anti-rheumatic drug as cream or plaster.

Depletes substance P (neuro-peptide pain mediator)

SE: Severe irritation/ Burning/ Away from eyes, mucous membrnae or injured skin/ avoid in children, pregnant or breast-fe-eding.

Refrigerant herbs

Menthol

Monoterpene alcohol from mint species. Also prepared synthetically.

Applied 3-4 times daily in painful areas.

Produce a strong **cooling sensation** as counter-irritants.

Camphor

Monoterpene ketone.

Has anti-septic/anti-itching activity.

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Page 1 of 2.

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Arthritis herbal treatment

Willow bark	Turmeric	Boswellia	Avocado
Has phenolic glycoside Salicin --- > hydrolyzed to salicyl alcohol --- > oxidized to salicylic acid .	Has yellow-pi- gment, curcumin .	Has boswellic acid .	As fresh fruit or extract/juice.
Analgesic, anti-pyretic & anti-infl- ammatory	Anti-inflam- matory action.	Unique anti-inflammatory action as NSAIDs. Treats chronic-inflammatroy diseases as rheumatoid arthritis specifically and bronchial asthma .	Specifically for osteoarthritis .
The naturally-occurring aspirin .	Rare SE: Stomach upsets/ Allergic reactions		MOA: Stimulates collagen synthesis & inhibits collagenase to restore normal cartilage structure.
			No SE.

Gout

DOC: Colchicine alkaloid	Celery fruits
Increase urates elimination from kidneys.	
Relieve symptoms & prevent recurrence when combined with low purine diet.	
Treated with indomethacin, NSAIDs but not low-dose aspirin .	
Aspirin has bimodal action/dose-dependent	
High doses >3g/day could be uricosuric (decrease uric acid level in blood by its excretion)	



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