ejpmr, 2021,8(8), 617-622.

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

HERBAL FORMULATION USE FOR THE MANAGEMENT OF ARTHRITIS PAIN

Swati J. Tembhurne*, Kalyani R. Nirwan and Upadesh B. Lade

Chhatrapati Shivaji College of Pharmacy, Chichgadh Road, Deori, Gondia, Maharashtra 441901, India.

***Corresponding Author: Swati J. Tembhurne**

Chhatrapati Shivaji College of Pharmacy, Chichgadh Road, Deori, Gondia, Maharashtra 441901, India.

Article Received on 11/06/2021 **Article Revised on 01/07/2021** **Article Accepted on 21/07/2021**

ABSTRACT

Around 80% of the population in the developing countries still believe on ancient medicine-based which is obtain from plants and animals for their primary health care. Herbal medicines are currently in application, and their acceptance is increases day by day. Herbal drugs are fairly selected due to their effectiveness, no side effects, and relatively cheap. The market for ayurvedic medicines is estimated to be expanding at 20% annually the potential efficacy of traditional medicines has stimulated the interest of scientists and doctors to turn on to traditional medicines. Herbs can effective in reducing swelling pain and soreness of the fracture and al so speedy recovery of function. In last few decades there has been growing In alternative forms of therapy globally. Herbal medicines are currently in demand and their popularity is increasing.

KEYWORDS: Bone healing, Bone fracture, herbal therapy, Osteoporosis.

INTRODUCTION

Rheumatoid arthritis has 19th century roots and a 20th century pedigree. Although its name was introduced in the 1850s, classification criteria were only developed 50 years ago. Observational studies in which these criteria are used portray treated rheumatoid arthritis as a serious long-term disease with dominant extra-articular features, limited treatment options, and poor outcomes.[1] Tumor necrosis factor (TNF) inhibitors and other biological agents have heralded a so-called therapeutic revolution, transforming the outlook for patients with rheumatoid arthritis. However, improved disease outcomes preceded biological agents, reflecting early use of conventional drugs, ambitious treatment goals, and better management of comorbidities. An historic parallel is the 1950s revolution in tuberculosis care, when improved conventional management followed by effective chemotherapy made tuberculosis curable.[2] Osteoporosis is a heterogeneous cluster of abnormal processes characterized by the net loss of bone. It results in a decrease in total mineralized bone without a decrease in the ratio of bone mineral to the organic matrix. As a result, there is a decrease in the overall amount of bone. The bone loss affects both cortical and trabecular bone, with trabecular bone loss more predominant in postmenopausal osteoporosis. Consequently, osteoporosis would lead to a bone with less tensile strength and significantly more susceptibility to fracture with less force.[3] This syndrome is clinically silent but progressive, usually only noted when a fracture occurs.[4] It is one of the most major public health problems with a mortality of 30% in the first year following the osteoporotic hip fracture.[5] Bone strength is the bone's resistance to fracture. It is difficult to quantify exactly what makes up the 'strength' of bone. It is related to, but not equivalent with, bone mineral density (BMD). BMD is a strong predictor of fracture, but there are also other factors, such as bone structure, bone remodeling and the newly coined term 'bone quality' to consider.

Symptoms

Tender, warm, swollen joints Joint stiffness that is usually worse in the mornings and after inactivity Fatigue, fever and loss of appetite Early rheumatoid arthritis tends to affect your smaller joints first-particularly the joints that attach your fingers to your hands and your toes to your feet.[6] As the disease progresses, symptoms often spread to the wrists, knees, ankles, elbows, hips and shoulders. In most cases, symptoms occur in the same joints on both sides of your body.

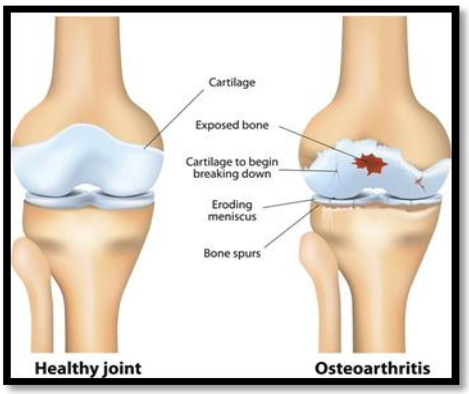
Osteoarthritis symptoms

OA can occur in any joint. However, the most commonly affected areas of the body include the:- hands, fingrtips,

knees, hips, spine, typically at the neck or lower back

The most common symptoms of osteoarthritis include:- Pain, tenderness (discomfort when pressing on the area with your fingers), stiffness.

Osteoarthritis (OA) is the most common joint disorder in the world. In Western populations it is one of the most frequent causes of pain, loss of function and disability in adults. Radiographic evidence of OA occurs in the majority of people by 65 years of age and in about 80% of those aged over 75 years. In the US it is second only to ischaemic heart disease as a cause of work disability in men over 50 years of age, and accounts for more hospitalizations than rheumatoid arthritis (RA) each year.[7] Despite this public health impact, OA remains an enigmatic condition to the epidemiologist. In this chapter, we will review the definition and classification of OA, its prevalence, incidence, risk factors and natural history.



CASTOR OIL

Castor oil is a multi-purpose vegetable oil that people have used for thousands of years. It's made by extracting oil from the seeds of the Ricinus communis plant. These seeds, which are known as castor beans, contain a toxic enzyme called ricin.[8] Castor oil gives great relief from all the debilitating pains that come with arthritis because of its anti-inflammatory components, which is precisely what one needs to soothe the inflammation and swelling. Be it osteoarthritis, rheumatoid or any of the other 100 variants – one thing is common, the pain from the swelling and the constant discomfort makes life a living hell, day in and day out.[9]

So, here's a post that will help you work around with one of the most vital ingredients known to mankind, and something right out of our kitchen which is an integral part of an Indian household. Let's look at different ways to use it depending on your need. Read on to learn more about this.

TURMERIC

- **Synonyms**:- Haldi
- **Biological source**:- It consist from fresh or dried rhizomes of "Curcuma longa"
- **Family** – zingiberaceae
- **Chemical constituent**:- it consist volatile oil, Resinous matter, starch Curcuminoids, curcumin, Demethoxycurcumin
- **Uses** :- lower inflammation, faster wound healing, reduce bone osteoporosis.[10]

- Turmeric helps to build and repair bone mass in the elderly, a new study reveals. Taking a supplement of the popular Indian spice improves bone density by up to seven per cent over six months, researchers found.[11]
-
- A compound in turmeric, known as curcumin, is thought to balance out cells that remove ageing parts of bone before it is replaced. Turmeric has anti microbial property which can prevent arthritis or bone injury.

GINGER

- **Synonyms**:- adrak
- **Biological source** :- it consist dried rhizomes of Zingiberofficinale
- **Family** – zingiberaceae
- **Chemical constituent**:- it contain 0.25-3% of volatile oil, 5-8% resinous matter, 56% starch and protein, it also contain gingerol.
- **Uses** :- carminative, stimulant, aromatic, stomachic, arthritis
- Reduces inflammation and relieves pain. Regular use of a weighted vest helps to build bone density, body strength, and balance. For arthritis some people have found relief consuming daily as little as one quarter inch slice of fresh ginger cooked in food or made into a tea.[12]

EUCALYPTUS

- **Synonyms**:- nilguiri
- **Biological source**:- obtained from leaves of eucalyptus globules
- **Family:-** myrtaceae
- **Chemical constituent**:- eucalyptol, cineole, α pinene, ferrulic acid, sesquiterpene, Ecalyptin
- **Uses**:- stimulant, antiseptic, diuretic, arthritis
- eucalyptus oil benefit is its ability to relieve pain and reduce inflammation. When it's used topically on the skin, eucalyptus can help to reduce muscle pain, soreness and swelling. the analgesic properties of the bones will reduce bone disease.

CLOVE

- **Synonyms**:- long, clove buds
- **Biological soure**:- dired flower bud of Eugenia caryophyllus.
- **Family** – myrtaceae
- **Chemical constituent**:- volatile oil 15-20%, eugenol, vanillin, tannin, resin
- **Uses**:- reduce inflammartion, improve digestion, temprory toothache remady.
- Cloves are also rich in manganese, providing an impressive 30% of the daily recommended amount in just 1 teaspoon (2 grams) of ground cloves
- Manganese is a mineral that's involved in the formation of bone and incredibly important to bone health.

MUSTARD

- **Synonym:-** Brown Mustard.
- **Biological Sources:-** These are dried ripe seeds of Brassica nigra linn.
- **Family:-** Cruciferae.
- **Chemical Constituents**:- The black mustard seed contains a thioglycoside *i.e.*, a β- glucopyranoside termed as sinigrin. It is also known as myronate potassium or allyl glucosinolate
- **Uses:-** antibacterial and antifungle, restfull sleep, arthritis
- Mustards have a high selenium content that can help improve bone strength. Selenium is found in large quantities in mustard and can improve bone health by adding strength and durability.[12] The mineral also strengthens the teeth, hair, and nails. Also, this essential nutrient is a potent antioxidant, which rids the body of free radicals. One tablespoon of mustard contains 21 percent of daily recommended selenium.

Harsingar

Harsingar is also known as Night Jasmine or Parijat. It is loaded with beneficial qualities and is native to Southeast Asia and South Asia. It is a small tree or a shrub growing up to 33 feet tall with a grey flaky bark. The leaves are quite broad with a margin. The flowers look breathtaking with 5 to 8 white corolla petals, having an orangish-red centre.[13]

The fruit which this flower bears is a brown round to heart shaped capsule of 2 cm diameter containing a single seed. This flower is found in abundance in West Bengal, India and also in Kanchanaburi Province in Thailand. This flower loses its brightness during daytime and is most commonly used as a yellow dye for clothing.

Nutritional Value of Harsingar

The leaves of Harsingar contains benzoic acid, fructose, glucose, carotene, amorphous resin, ascorbic acid, methyl salicylate, tannic acid, oleanolic acid and flavanol glycosides. The flowers are very beneficial as it contains essential oils and glycosides. The seeds contain palmitic, oleic and myristic acids.

The bark of this plant is useful due to its alkaloids and glycosides content. The extracts of this flower posses antifungal and antiviral properties. Apart from this antileishmanial, hepatoprotective and immunostimulant properties are also present in it.

COCONUT[14]

- **Biological source :-** it is obtained from dried fruit of Cocus nucifera
- **Family:-** Arecaceae
- **Chemical constituent:-** Laurie acid, vitamin C, cat chin.
- **Uses:-** boosts immunity, anti-inflammatory, constipation relief
- Coconut oil helps the body absorb calcium and magnesium. Both calcium and magnesium are essential in developing and maintaining strong bones. Coconut oil can help to prevent and possibly cure osteoporosis.
- It is recommended that three tablespoons of coconut oil be taken daily to help prevent osteoporosis and five tablespoons be taken daily to help reverse.

PREPARATION OF BONE STRENGTH OIL

Formulation

S.no.	Ingredients	Quantity
1.	Turmeric oil	2 ml
2.	Ginger oil	2ml
3.	Eucalyptus oil	2ml
4.	Clove	1gm
5.	Coconut oil	10 ml
6.	Mustard oil	10ml

Oil Preparation

1. Clean all the apparatus and dry it
2. **A**-take china dish add 10 ml mustard oil and 1 gm of clove heat by the use of heating mantle until the smell of clove occurs
3. B-take conical flask add 10 ml coconut oil by continuously shaking in rotary shaker after 2 min add prepared **A** oil
4. Again after every 2 min add 2ml of turmeric, ginger, and eucalyptus oil drop wise by the help of pipette one by one continuously shaking
5. Prepared oil can be evaluated

EVALUATION OF PREPARED OIL

- **Viscosity**:- take viscometer and should be clean and dry the it . A defined volume of oil is poured into the bulb C of viscometer. this oil is sucked throughthe left arm slightly above the mark A. the oil is then allowed to flow back and the time of flow of oil from A to B is noted. then the apparatus is cleaned and the. process is repeated for 2nd with water whose viscosity is known

Formula: $$\frac{n_2}{t_1 d_1} = \frac{2 d_2}{} \times n_1$$

- **Saponification**:- weight accurately 2 gm of prepared oil into 250 ml of RBFadd 25 ml of 0.5 M ethanolic KOH through pipette. boil the above content of RBF under reflux either on water bath or heating mantle. heat the above content for 1/2 hours. cool down the content after 30 min add 2ml of phenophthaline indicator and directly titrate with 0.5 M HCL (reading A)

• carry out the blanck determination (reading B) calculate the saponification value of given oil by following formula :-

sap value = 28.05 × [B - A] / W (actual wt ot oil taken)

- **Phytochemical test**

✓ Flavonoids :- take test tube add prepare oil and add conc. Sulphuric Acid 1ml and 0.5g of Mg . A pink or red coloration that Disappear on standing 3min indicates the presence of flavonoids.

✓ Tannins :- 1ml of the oil was added in 2ml of water in a test tube 2 to 3 drop of dilute ferric chloride solution was added and observed for green to blue-green or a blue black coloration.

✓ Alkaloid :

1. Dragendorff's test :- 2-3 ml of the oil add few drop of dragendorff's Reagent (potassium bismuth iodide) orange brown ppt formed
2. Mayer's test :- 2-3 ml of the oil add few drop of Mayer's reagent (potassium mercuric iodide) white brown ppt formed
3. Hager's test :- 2-3 ml of the oil add few drops of Hager'sreagent (picric acid) yellow ppt formed
4. Wagner's test :- 2-3 ml of oil add few drop of iodine potassiumiodide Reddish brown ppt is formed

✓ Glycoside :-

Liebermann's test:- 2ml oil + 2ml CHCL3 + 2ml CH3COOH

Violet to green to blue coloration Borntrager's test :- 3ml oil + 3ml benzene + 5ml NH3 (10%)

Pink, violet or red coloration in ammoniacal layer Saponins :- prepared oil + few drop of olive oil Emulsion

form Phenols :- Ferric chloride test :- prepared oil were treated with 3-4 drops of ferric chloride solution. the bluish black colour was indicate that precence of phenols.

✓ pH test :- pH meter is used
calibration:- Put the electrode in distilled water. wait for the meter to stabilize, then adjust the meter until it reads. pH of 7.00 remove the electrode from the solution, and rinse it with distilled water test :- place the electrode in the sample, wait for the meter to stabilize then read and record the ph of sample remove the electrode and repeat it to get accurate result.

RESULT
Viscosity:- n_1(viscosity of water) = 1.0016
d_2 (density of sample) = 0.836
d_1 (density of water) = 0.997
t_2 (timing of runoff of sample) = 7.01
t_1 (timing of runoff of water) = 1.02

$$n_{2=} \frac{7.01 \times o.836}{1.02 \times 0.997} \times 1.0016$$

$n_{2=}$ 5.81poise

Saponification
Density of prepared oil = 0.836
Volume = 2/ 0.836
= 2.39ml

Saponification value of prepared oil
W (weight of oil taken) = 2.39 ml
B (blank reading) = 20.01
A (sample reading) = 9.2

SAP value = 28.05×(20.01- 9.2) / 2.39
= 126.77

S.no.	Parameters	Inference
1.	Specific gravity	1.096
2.	Viscosity	5.81
3.	Acid value	4.8
4.	Saponification value	126.77
5.	pH	5.6
6.	sensitivity test	No irritation
7.	irritation test	No irritation
8.	grittiness	smooth

Result phytochemical test screening
1. Test for flavonoids

S.No.	Phytochemical	Inference
1	Flavonoids	+

2. Test for tannins

S.No.	Phytochemical	Inference
2	Tannins	-

3. Test for alkaloids

S.No.	Phytochemical	Inference
	Alkaloid	
1	Dragendorff's	+
2	Mayer's	+
3	Hager's	+
4	Wagner's	-

4. Test for glycoside

S.No.	Phytochemical	Inference
1	Glycoside	
2	Liebermann's	+
3	Borntrager's	+

5. Test for saponins

S.No.	Phytochemical	Inference
4	saponine	-

6. Test for carbohydrate

S.No.	Phytochemical	Inference
5	carbohydrate	-

7. Test for phenol

S.No.	Phytochemical	Inference
6	Phenol	+

CONCLUSION

There is need of open mindedness from both the modern as well as ayurvedic medical community to correlate and utilize all the scientific developments and ayurvedic concepts of understanding the mysteries of human body. The holistic approach in the science is gradually replacing the reductionism or purely analytic tradition which studies systems only after dividing them into their smallest possible parts. These herbs have helped the human race to survive on earth for thousands of years while modern drugs are phenomenon of less than a century. Today, time has come when all the medical scientists have to think on these lines for better future health and survival of humanity. As with the help of the oil the strength of bone is increased and along with other therapy it also show synergistic effects with no side effects and economic in price.

REFERENCES

1. Curcuma longa L." Plants of the World Online, Kew Science, Kew Gardens, Royal Botanic Gardens, Kew, England. 2018. Retrieved 26 March 2018.
2. Turmeric (pronunciation)". Merriam-Webster Dictionary. 2015.
3. Priyadarsini, KI (2014). "The chemistry of curcumin: from extraction to therapeutic agent". Molecules, 19(12): 20091–112. doi:10.3390/molecules191220091. PMID 25470276.
4. Turmeric processing. Kerala Agricultural University, Kerala, India. 2013. Retrieved 10 October 2015.
5. Eucalyptus. Australian Plant Census. Retrieved 11 March 2019.
6. Sunset Western Garden Book, 1995: 606–607.
7. Eucalypt forest. Commonwealth of Australia 2017. Retrieved 29 January 2017.
8. Zingiber officinale. Germplasm Resources Information Network (GRIN). Agricultural Research Service (ARS), United States Department of Agriculture (USDA). Retrieved 10 December 2017.
9. Ginger, NCCIH Herbs at a Glance. US NCCIH. 1 September 2016. Retrieved 2 February 2019.
10. Sutarno H, Hadad EA, Brink M (1999). "Zingiber officinale Roscoe". In De Guzman CC, Siemonsma JS (eds.). Plant resources of South-East Asia: no.13: Spices. Leiden (Netherlands): Backhuys Publishers. pp. 238–244.
11. "Syzygium aromaticum (L.) Merr. & L. M. Perry". Germplasm Resources Information Network (GRIN). Agricultural Research Service *(ARS)*, United States Department of Agriculture (USDA). Retrieved June 9, 2011.
12. Yun, Wonjung (13 August 2018). "[Tridge Market Update] Tight Stocks of Quality Cloves Lead to a Price Surge". Tridge. Retrieved 13 August 2018.
13. Dorenburg, Andrew and Page, Karen. The New American Chef: Cooking with the Best Flavors and Techniques from Around the World, John Wiley and Sons Inc., 2003.
14. Breslin, Andrew (2017). "The Chemical Composition of Green Plants". Sciencing, Leaf Group Ltd.
15. Molyneux, RJ; Lee, ST; Gardner, DR; Panter, KE; James, LF (2007). "Phytochemicals: the good, the bad and the ugly?". Phytochemistry, 68(22–24): 2973–85. doi:10.1016/j.phytochem.2007.09. 004. PMID 17950388.
16. Harborne, Jeffrey B.; Baxter, Herbert; Moss, Gerard P., eds. (1999). "General Introduction". Phytochemical dictionary a handbook of bioactive compounds from plants (2nd ed.). London: Taylor & Francis. p. vii. ISBN 9780203483756.
17. Phytochemicals. Micronutrient Information Center, Linus Pauling Institute, Oregon State University, Corvallis, Oregon 2017. Retrieved 12 February 2017.
18. Heneman, Karrie; Zidenberg-Cherr, Sheri (2008). "Publication 8313: Phytochemicals" (PDF). University of California Cooperative Extension.
19. "Carotenoids". Micronutrient Information Center, Linus Pauling Institute, Oregon State University, Corvallis, Oregon. July 2016. Retrieved 12 February 2017.
20. Litmus to ease hiring woes. Business Standard. 6 February 2013. Retrieved 10 March 2018.