





## ETHNOMEDICAL INFORMATION OF ANTI-INFLAMMATORY HERBAL DRUGS W.S.R TO BULBOPHYLLUM NEILGHERRENSE WIGHT

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### ABSTRACT:

*Inflammatory and degenerative joint diseases or arthritis are most common disease manifestation of old age, but the present life style contributes to such conditions at an earlier stage. The alternative systems of medicines are widely appreciated for the successful treatment of such conditions nowadays; even then NSAIDS are adopted as a first choice of treatment by many. Ayurveda being one among them has a vast number of single herbs as well as compound formulations for different types of arthritic conditions. Recent research advances have scientifically validated most of them. Apart from these classical drugs, new ones are being added which are in practice among ethnic / folk groups. This paper reviews such anti-inflammatory ethno medical claims along with available scientific data and with special reference to *Bulbophyllum neilgherrense* Wight- a tribal claim.*

**Key words:** *Anti-inflammatory, Ethnomedical, Bulbophyllum neilgherrense*

### INTRODUCTION

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Ethno medicine refers to the study of traditional medical practice which is concerned with the cultural interpretation of health, diseases and illness and also

addresses the healthcare-seeking process and healing practices. Research interest and activities in the area of ethno medicine

have increased tremendously in the last decade.<sup>1</sup>India is one of the ten most forest-rich countries of the world.<sup>2</sup>India has a thriving non-wood forest products industry, which produces latex, gums, resins, essential oils, flavors, fragrances and aroma chemicals, incense sticks, handicrafts, thatching materials and medicinal plants.<sup>3</sup>India, with 2.4% of the world's area, has over 8% of the world's total biodiversity, making it one of the 12 mega diversity countries in the world.<sup>4</sup> India with 550 tribal communities belonging to 277 ethnic groups represents one of the richest heritages in the world. They account for about 7% of the

population in India. According to a recent study conducted under All India Co-ordinated Project on Ethno biology (AICRPE)- (1992-1998), over 10,000 wild plant species are reported to be used by tribals for meeting their primary health care, food and other material requirements. They use over 3,900 species of plants for edible purposes, over 8,000 for medicinal uses, another 1,000 for fodder, fibre and assorted purposes.<sup>5</sup>

Vast ethno medical knowledge and practices are existing in different parts of India since ancient time. Among them a few have evidence based data and further research is going on. For example tribes of Kanyakumari use - *Commelina benghalensis* whole plant to treat bed sores, breast sores and pimples, *Erythrina indica* leaves and flowers are given to lactating mothers to increase secretion of milk, *Cocos nucifera* flower infusion to treat diabetes and uterine disorders.<sup>6</sup> Garos of Meghalaya rub the paste of *Ampelocissus barbata* tuber for swelling and pains.<sup>7</sup> Folk of Khasi and Jaintia tribes in Meghalaya use paste of *Aristolochia tagala* root or fruit for rheumatic pain externally.<sup>8</sup>

Similarly *Bulbophyllum neilgherrense* Wight pseudobulb is used by the Gowlis of Uttara Kannada district of Karnataka to cure different ailments like heart diseases, rheumatism, leucoderma and as a tonic.<sup>9-11</sup> Thus this paper aims at reviewing a few ethno medical claims indicated in painful joint conditions with special reference to *Bulbophyllum neilgherrense* Wight.

Arthritis is a generic term for inflammatory joint disease and among them osteoarthritis is the most common form.<sup>12</sup> Data on the prevalence of arthritis and rheumatic diseases are necessary background information to understand the burden of disease and the potential need for health care for people with these diseases.<sup>13</sup> The prevalence of osteoarthritis increases indefinitely with age, because the condition is not reversible. Men are affected more often than women among

those aged <45 years, whereas women are affected more frequently among those aged >55 years. Worldwide estimates are that 9.6% of men and 18.0% of women aged  $\geq 60$  years have symptomatic osteoarthritis.<sup>14</sup> Rheumatoid arthritis (RA) is a common, chronic, inflammatory, autoimmune disease of unknown aetiology affecting approximately 1% of the world population.<sup>15-16</sup> The overall world prevalence of RA is approximately 0.5% to 1%.<sup>17</sup> Another form of arthritis is gouty arthritis mainly found in urban areas of India. Gout is the second harmful metabolic disease after diabetes mellitus. The prevalence is higher in urban Indian population due to increasing prevalence of metabolic syndrome in younger population. It is primarily a disease of adult men, peak incidence being between 30-50 years.<sup>18</sup>

Non-steroidal anti-inflammatory drugs are some of the most often used medicines to relieve pain in adults. NSAIDs are also a common treatment of choice for chronic (long-term) health problems such as arthritis (rheumatoid arthritis, osteoarthritis and others) and lupus. All drugs have a risk of side effects, including NSAIDs. Possible risks of all NSAIDs include, ; Stomach problems like gastritis, bleeding, ulcer, high blood pressure, fluid retention (causing swelling, such as around the lower legs, feet, ankles and hands) kidney problems, heart problems rashes etc.<sup>19</sup> A recently published study reveals even greater risks with these drugs. In the study Danish researchers found that use of NSAID's among heart attack survivors greatly increased their risk of recurrence of heart attack. This risk persisted even six months after the heart attack, and even if the use of the drugs was brief.<sup>20</sup> Hence it is necessary to explore and provide anti inflammatory drugs from alternative systems of medicine which can assure the cure without damaging other systems.

## MATERIALS AND METHODS

Ethno medical literatures, Floras, Various journals, Scientific Research Publications and internet are reviewed.

**Table no: 1 lists of some of the ethno medical claims for inflammation**

Sr. No	Name Family	Part Used	Uses	Location	Scientific Validation
1.	<i>Averrhoa carmabola</i> .L; Oxalidaceae (Kamaranga)	Leaves	Boiled leaves are used as a poultice on swellings caused by stroke	Tharus of Basti District UP <sup>21</sup>	A study evaluated the topical anti-inflammatory effects of the crude ethanolic extract of leaves, its hexane, ethyl acetate, and butanol fractions and two isolated flavonoids on skin inflammation, preliminary results support the anti-inflammatory activity. <sup>22</sup>
2.	<i>Cichorium intybus</i> ; Asteraceae (Kasani)	Seeds	Seeds are used externally in inflammatory affections for cooling	Bundelkhand region, Madhyapradesh <sup>3</sup>	Ethanolic and aqueous extracts of roots of chicory was studied for anti-inflammatory activity, which demonstrated significant dose-dependent decrease in paw edema. <sup>24</sup>
3.	<i>Ipomea digitata</i> ; Convolvulaceae (Ksheeravidari)	Root	Root are used in inflammations	North-East region of India <sup>25</sup>	
4.	<i>Clitoria ternatea</i> Linn. ;Leguminosae (Aparajita)	Root	Root used as a poultice on swollen joints	Nagpur & Wardharforest s, Maharashtra <sup>26</sup>	Root's methanol extract when given by oral route to rats was found to inhibit the rat paw oedema caused by carrageenan and vascular permeability induced by acetic acid in rats. In the acetic acid-induced writhing response, the extract markedly reduced the number of writhings. <sup>27</sup>
5.	<i>Leonitis nepetaefolia</i> ; Labiatae (Granthiparni)	Leaves	Decoction is used in rheumatism	Nagpur & Wardha forests, Maharashtra <sup>28</sup>	Several extracts of aerial parts showed anti-inflammatory activity. All the tested extracts showed, in some degree, anti-inflammatory activity. <sup>29</sup>
6.	<i>Daemia extensa/Perularia daemia</i> ; Asclepiadaceae (Uttamarini)	Leaves	Leaves, ginger, lime are ground and apply on affected part	Used by folk of Tirunelveli District, Tamilnadu <sup>30</sup>	Acute and chronic anti-inflammatory activity of petroleum ether extract, ethanolic extract and aqueous extract of whole plant have been investigated which showed significant anti-inflammatory activity. <sup>31</sup>
7.	<i>Tamarindus indica</i> , L; Fabaceae (Amlika)	Fruit pulp	Fresh fruit pulp paste mixed with lime is applied on the painful muscle swelling.	Malayali tribal in Yelagiri hills of Eastern ghats <sup>32</sup>	The methanol extract of fruit pulp was investigated for its effects on the abundance of HepG2 cell lysate proteins. The extract also appeared to cause decreased abundance of proteins involved in the metabolism of nucleic acids and polyamines in HepG2 cells. This could possibly explain the anti-inflammatory action that was earlier reported <sup>33</sup>
8.	<i>Madhuca indica</i> ; Sapotaceae (Madhuka)	Bark	Bark used as astringent and good for inflammations	Tribals of Bankura Dist. West Bengal <sup>34</sup>	The crude methanolic extract of bark and aerial parts were evaluated for anti-inflammatory, analgesic and antipyretic activities in male wistar rats. The results suggest a potential benefit of the methanolic extract in treating conditions associated with inflammation, pain and fever <sup>35</sup>

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9.	<i>Pterocarpus marsupium</i> ; Fabaceae (Bijaka)	Heartwood	The heartwood is used as an astringent and in the treatment of inflammation and diabetes.	Malayali tribals in Yelagiri hills of Eastern ghats <sup>36</sup>	In human peripheral blood, extract was shown to decrease prostaglandin E2 levels possibly through inhibition of the inflammatory mediator cyclooxygenase-2 <sup>37</sup>
10.	<i>Annona squamosa</i> L ; Annonaceae (Sitaphala)	Leaves	Leaf paste mixed with turmeric powder is applied externally for inflammations.	Malayali tribals in Yelagiri hills of Eastern ghats <sup>38</sup>	The ethanolic extract of leaf was examined for centrally acting analgesic action by using the hot plate method and carrageenan induced rat paw oedema both were significantly decreased <sup>39</sup>
11.	<i>Syzygium cumini</i> (L.) Skeels (Jambu)	Bark	Paste of stem bark is applied topically to treat swellings.	Malayali tribal in Yelagiri hills of Eastern ghats <sup>40</sup>	The ethanolic extract of the bark was investigated for its anti-inflammatory activity in animal models which demonstrated that bark extract has a potent anti-inflammatory action without any side effect on gastric mucosa. <sup>41</sup>
12.	<i>Angelica glauca</i> Edgew ; Apiaceae (Dhava)	Root	Dried root powder mixed with oil is applied to cure oedema	Himachal hills <sup>42</sup>	
13.	<i>Mimosa pudica</i> Mimosaceae (lajjalu )	Leaf	Leaf paste is applied in boils and swellings	Kanikkars tribals of South India <sup>43</sup>	Anti-inflammatory activity of ethanolic extract of leaves was investigated using carrageenan induced paw oedema and cotton pellet granuloma technique in albino rats, The results indicate that it has an anti-inflammatory activity. <sup>44</sup>
14.	<i>Erythrina variegata</i> L. (Fabaceae), (Paribhadra)	Leaf	Leaf paste is applied locally on rheumatic swellings. Bark is reportedly used to treat rheumatism	Jalgaon district, Maharashtra <sup>45</sup>	Anti-inflammatory effect of ethanolic extract of <i>Erythrina variegata</i> in albino rats exhibited dose dependent and significant anti-inflammatory activity in acute and chronic model of inflammation. <sup>46</sup>
15.	<i>Mitragyna parvifolia</i> (Roxb.) Korth. (Rubiaceae) (Kadamba)	Leaves	Leaves are applied as poultice on rheumatic swellings	Jalgaon district, Maharashtra <sup>47</sup>	Ethanolic leaves extract was screened for anti-inflammatory activity using Carrageenan-induced paw oedema and the results showed significant activity. <sup>48</sup>
16.	<i>Capparis zeylanica</i> L. (Capparidaceae) (Karira)	Root and bark	Roots and bark paste are applied together on rheumatic swelling of joints. Similar use is reported from other parts of India	Jalgaon district, Maharashtra <sup>49</sup>	A study to evaluate the analgesic, anti-inflammatory and antipyretic effect of the methanolic and water extracts using different acute and chronic models of rat and mice. Both the extracts exhibited dose-dependent anti-inflammatory activity but the better effect of alcoholic extract was observed. <sup>50</sup>
17.	<i>Aloe barbadensis</i> Mill. (Liliaceae)(Kumari)	Mesophyll	Warm mesophyll content is rubbed on the affected part and is repeated for thirteen	Kalakad-Mundanthurai tribals <sup>51</sup>	A study of aqueous extract of whole leaf in various concentrations was carried out for its anti-inflammatory and analgesic activities in albino wistar rats. Whole leaf aqueous extracts at various concentrations significantly reduced formation of oedema induced by carrageenan and



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			days to reduce the swelling in the joints.		formaldehyde and granuloma formation in a dose dependent manner. <sup>52</sup>
18.	<i>Euphorbia tirucalli</i> L. (Euphorbiaceae), (Snuhi)	Latex	Latex is warmed and then applied topically on knees for rheumatic swelling till cure. <sup>53</sup>		The Aqueous, dichloromethane-methanol and pet. ether extract of the latex of was screened for analgesic and anti-inflammatory activities. The significant anti-inflammatory effect of latex extracts was compared to that of ibuprofen and which may be due to the presence of flavanoids in the latex extracts <sup>54</sup>
19.	<i>Cleome viscosa</i> L. Capparidaceae (Tilaparni)	Leaves	Leaves paste is applied for inflammations.	Nagapatnam, Tamilnadu <sup>55</sup>	A study evaluated the anti-inflammatory potential of the methanol and chloroform extracts by <i>in-vitro</i> methods. and it can be concluded that the extracts possessed marked <i>in- vitro</i> anti-inflammatory activity and the effect could be due to the presence of various phytochemicals present in the plants. <sup>56</sup>
20.	<i>Abrus precatorius</i> L. Fabaceae (Gunja)		Leaf decoction is applied in the affected portion in inflammation;	Wayanad, Kerala <sup>57</sup>	Leaves were investigated for its anti-inflammatory activity using carrageenan-induced rat paw oedema model, protein denaturation and membrane stabilization method. The results showed significant inhibition of rat paw edema. <sup>58</sup>
21.	<i>Hibiscus rosasinensis</i> L. Malvaceae (Japa)	Root, Bark	Root/bark paste is applied in the case of Inflammations. <sup>59</sup>		The anti-inflammatory activity was studied in carrageenan and dextran induced rat paw oedema using Indomethacin as standard which showed significant anti-inflammatory activity. <sup>60</sup>
22.	<i>Cocos nucifera</i> L. (Arecaceae) (Narikela)	Kernel	Paste of fresh kernel mixed with turmeric powder is applied on joints to reduce swellings and pain.	Jalgaon district, Maharashtra <sup>61</sup>	The fresh juice and aqueous kernel extract exhibited significant anti-inflammatory and antipyretic activities and promote wound healing with the latter producing a more effective effects in all assays used. <sup>62</sup>

### DISCUSSION

Ayurvedic classics have enumerated many anti-inflammatory drugs like *Bilwa*, *Guggulu*, *Rasna*, *Punarnava*, *Sunthi* etc. and Acharya Charaka has attributed a gana for anti-inflammatory action viz. *Sothahara dasemani* which contains *Dashamoola*. A critical analysis of the information indicated in the above table indicates that 19 drugs out of 22 are used as an external application either to reduce pain or swelling at the joint or on the skin. Only *Leonitis nepetaefolia* is administered

orally. In total 20 drugs out of 22 claims are scientifically validated in different experimental models for their anti-inflammatory activity. Rest of them may be further evaluated for anti-inflammatory activity.

Besides these non-classical drugs like *Malva rotundifolia*, *Solanum verbascifolium*<sup>63</sup>; *Phyllanthus debilis*, *Glycosmis mauritiana*<sup>64</sup>; *Diplocyclos palmatus*, *Lantana camara*, *Launea*

*procumbens*, *Kydia calycina*, *Hibiscus pandulaeformis*, *Spilanthes paniculata*, *Sonchus brachyotus*, *Trichodesma amplexicaule*<sup>65</sup>; *Dodonea viscosa*, *Vanda tessellate*, *Biden spilosa*, *Solanum erianthum*<sup>66</sup>; *Eryngium foetidum*, *Lycopodium clavatum*, *Urena lobata*, *Ardisia colorata*<sup>67</sup>; *Croton roxburghii*, *Vernonia travancorica*<sup>68</sup>; *Bidens biternata*<sup>69</sup> etc. are also being used by tribes for treating various inflammatory conditions. Some of them are also used to treat other conditions like *Malva rotundifolia* is used in bladder inflammation, *Bidens biternata* in foul smelling ulcers and swollen glands, *Hibiscus pandulaeformis* and *Zingiber purpureum*<sup>70</sup> in sprains, *Neolitsea chinensis*<sup>71</sup> in internal injury, *Rumex dentatus*<sup>72</sup> in sore throat, *Biden spilosa* used in ulcers, *Vanda tessellate* in bronchitis, *Ardisia colorata* in fever, *Plumeria rubra*<sup>73</sup> latex for the treatment of

itches and fever and *Stellaria media*<sup>74</sup> as plasters for broken bones.

*Bulbophyllum neilgherrense* Wight which is one among them is an epiphytic orchid with rhizomatous stem modified into pseudo bulb abundantly found in Western Ghats. It is being used as both internal and external medication for various diseases in ethno-medicine. The villagers of Karnataka use its matured pseudo bulb by cutting it into pieces longitudinally which are dipped in honey and consumed in the management of heart problems.<sup>75</sup> Its bulbs and leaves ground into fine paste mixed with cow's milk, orally administered for leucoderma.<sup>76</sup> Paste is externally applied for arthritis. Pseudo bulb juice is used as a cooling drink in summer and also as tonic.<sup>77</sup> Whole plant is used to cure pimples and skin allergy.<sup>78</sup> Pseudo bulbs chopped and boiled in coconut oil is applied externally on rheumatism.

## CONCLUSION

Treatises of Ayurveda documented several single, simple and poly herbal formulations for the management of various diseases. *Guggulu* (*Commiphora mukul*), *Guduchi* (*Tinospora cordifolia*), *Nirgundi* (*Vitex negundo*), *Shallaki* (*Boswellia serrata*), *Parijata* (*Nyctanthes arbortri-tris*), *Rasna* (*Alpinia galanga*), *Yashtimadhu* (*Glycyrrhiza glabra*) which are included in various Ayurvedic formulations have been proved for their significant anti-inflammatory activity.

Herbs mentioned in ethno medicine should be extensively studied which may facilitate to produce most dependable safe and effective anti-inflammatory drugs. *Bulbophyllum neilgherrense* Wight- a tribal claim with regard to hypocholesteraemic activity has already been scientifically validated and its anti-inflammatory activity is yet to be evaluated. Research about tribal claims may add some more potential drug to the armamentarium of the physician.

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