

## A CRITICAL REVIEW ON PHARMACODYNAMIC PROPERTIES OF ERANDA PANCHANGA APPLICATION FOR AVAHANDI (MALUNION) OF BONES IN TRADITIONAL MEDICINE

### Review article

<sup>1</sup>K .T .C Dilrukshi,

<sup>2</sup>D.Samarawickrma,

<sup>3</sup>S.P.A.S Nishan

<sup>1</sup>Demonstrator, <sup>2</sup>Traditional Medical officer, <sup>3</sup>Lecturer (Probationary)

Faculty of Indigenous Medicine , University of Colombo, Rajagiriya, Sri Lanka

### ABSTRACT

This study was conducted to review pharmacodynamic properties of ingredients of *Eranda panchanga* Application (Malluma) and study the therapeutic value of *Eranda panchanga* Application by reviewing the collaborative action of the each of the ingredients. The medicinal formula was selected from a *Veda parampara*. Pharmacodynamic properties were collected from authentic texts, previous research articles, journal articles, web sites etc. Ingredients of selected application are whole plant of *Eranda* (flower, seed, leaves, root bark, stem), *Haridra* (*Curcuma longa*) sea salt (NaCl) and coconut milk upon analyzing the pharmacodynamic properties of ingredients *rasa* of this Application contains 87.5% *Madhura*, 75% *Katu*, 37.5% *Kashaya* 25% *Tikta*, 12.5% *Lavana*. Out of *guna Snigdha guna* 87.5% , *Teekshna* 62.5%, *Laghu* 25% *Guru* 25% etc. 75% drugs contain *Ushna veerya*, rest are *Sheeta virya*. Out of *Vipaka* 62.5% *Madhura*, 12.5% *Katu*. Among the *Dosha karma* majority of ingredients have *Kapha vata shamaka* action and *Tridosha shamaka* action, *Shoolahara*, *Shotahara*, *Vedanastapana*, *Angamardaprashmana* actions are also presented. Some active ingredient compounds are flavonoids, alkaloids, steroids, glycosides, terpenoids, tannins that perform antimicrobial, antifungal, anti-inflammatory, analgesic, antioxidant, bone regeneration activity, wound healing activity etc. The collected data revealed that this formula pacifies *Kapha vatadosha*, cleans the obstructed *Srotas*, decalcify bone spurs, reduces pain swelling and stiffness of joints and improves bone regeneration activity. Therefore it will be a potential remedy for dislocation of joints. Further therapeutic efficacy of this will be analyzed through a case study

**Key Words:** *Eranda panchanga*, Application (*Malluma*), Malunion, Traditional medicine, Pharmacodynamic properties

### INTRODUCTION

Traditional medicine comprises medical aspects of traditional knowledge that developed over generations. Four systems of Traditional medicine have been adopted in Sri Lanka Ayurveda, Siddha, Unani and Deshiyachikitsa. DeshiyaChikithsa is a medical system that bears some resemblance to Indian Ayurveda but produced and evolved into “Hela Vedakama” in Sri Lanka (“Hela Diva”).

Although it is not clear how Traditional Medicine was originated, ancient sources state that *PulasthiIrshi*, a descendant of the three Vedas, represented the Hela Diva at the Irshi Conference in the Himalayas of India[1]. Malunion of bones according to Ayurveda and traditional orthopedic system. A malunion occurs when a fracture doesn't heal properly. Most often, this means that there was a gap between the two healing bones where no bone grew,

rather than the two healing bones joining correctly. This can occur in joints but is not limited to joints. Because new bone has grown in, complications occur. In a joint, mobility may be severely limited. In an extremity, you may see twists or bends, especially in fingers. The causes of a malunion are broad, but most often it's the result of not seeking medical treatment soon enough after a fracture (or not seeking it at all), removing a cast or other immobilizing tool too early, or not aligning bones properly during the immobilization process. In addition to the bends and limited movement we discussed a moment ago, malunions are quite painful and can result in the deterioration of bones[2]

*Eranda* (*Ricinus communis* L. Euphorbiaceae) is perennial shrub used for multiple purposes in Ayurvedic medicine and has numerous medicinal qualities.[3]The two plant varieties are referred on *Susruta Samhita* under their common names as *Rakta Eranda* and *Shwetha Eranda*.*Eranda* is commonly found medicinal with wide use as purgative/ laxative and for *Vata* disorders (neuro-muscular). The root, leaves, flowers, root bark and seeds, almost whole plant (*ErandaPanchanga*)is useful for curing many ailments[4].According to Charaka Samhita From all the herbs which have the capability for pacifying *vata*dosha and are aphrodisiac in nature *Eranda* is the best.[5]

Pharmacodynamic defines as process “what drug does to the body” means pharmacological action of drug. The classic Indian system of health management Ayurveda suggested different approaches for the restoration of normal health and treating diseases. As per

Ayurveda the natural drugs exerts their action by virtue of their *Guna*, *Rasa*, *Vipaka*, *Prabhava* and *Virya*. These properties of drugs contribute towards the pharmacodynamic profile of Ayurveda drugs. The process of biotransformation of drug in Ayurveda can be described as *Vipaka* which relates pharmacokinetic transformation of natural drugs. The Ayurveda perspectives on drug's action need to be explored with modern concepts therefore present article summarizes pharmacokinetic & pharmacodynamic aspects of drugs with reference to Ayurveda principles and theories.

Why this review is needed?

The Medicinal formula was selected from a *Veda Parampara*.It was a very effective formula for malunion of bones even acute condition same as chronic cases. It was successfully answered for stiffness of joints both large and small joints. But It was not scientifically proved yet according to Ayurveda. Because of that this research mainly focus on the pharmacodynamic properties of ingredients of *Eranda panchanga* Application

#### AIMS AND OBJECTIVES

- To review pharmacodynamic properties of ingredients of *Eranda Panchanga* Application
- To Study the therapeutic value of *Eranda Panchanga* Application by reviewing the collaborative action of the each of the ingredients.

#### MATERIAL & METHODS

##### Materials and Data Collection

The Medicinal formula was selected from a *VedaParampara* Pubmed and Google scholar web search regarding Bone regenerating action Authentic texts, Previous research articles, Journal articles, web sites, *Kedumbidum* clinic District Ayurveda hospital Galle etc.

Combination of the following key words used for the study *Eranda panchanga Application*, Traditional medicine, Pharmacodynamic properties

#### Methods

Ingredients of the formula are selected, washed and cut in to pieces. Then chopped and prepared application with

adding coconut milk according to *Vedaparampara*

- Whole plant of *Eranda* (flower, seed, leaves, root bark, stem),
- *Haridra* (*Curcuma longa*)
- Sea salt (NaCl)
- Coconut milk



Figure 1 *Eranda* leaves, stem



Figure 2 *Haridra*



Figure 3 *Eranda* root, flowers



Figure 4 *Eranda* seeds



Figure 5 Sea salt (NaCl)



Figure 6 Coconut milk

Ayurvedic science is rich with herbal, mineral and animal drugs and abundant formulations, the action of these drugs and formulations is difficult to interpret with respect to contemporary science.[6] This requires an adequate knowledge of fundamental therapeutic factors. The present work is an appraisal on the therapeutic behavior of *Eranda Panchanga*

application which may be administered in formulations. Adopting the concepts of *Rasadi Panchaka* (namely *Rasa, Guna, Virya, Vipaka, Prabhava*) which constitute the inbuilt factors a critical review on the concept has been made and superimposed to describe their therapeutic role in the living body

**Table 1. Pharmacodynamic properties of Eranda Panchanga Application**

Ingredient s	Rasa	Guna	Viry a	Vipak a	Actions
1. Eranda flower	Madhura, Katu	Snigda, Teekshna, Sukshma	Ushna	Madhura	Vatahara, shoolahara
2. Eranda Leaves	Madhura, Katu, kashaya	Snigda, Teekshna, Sukshma	Ushna	Madhura	Kaphavatashamaka,
3. Erandaseeds	Madhura, Katu Kashaya	Snigda, Teekshna, Sukshma	Ushna	Madhura	Deepana, Amapachana, Srotoshodana
4. Stem Bark	Madhura, Katu, Tikta	Snigda, Teekshna, Sukshma, guru	Ushna	Madhura	Kaphavatashamaka
5. Root bark	Madhura, katu, kashaya	Snigda, Teekshna, Sukshma	Ushna	Madhura	Kaphavatashamaka, Vedanasthapana
6 Amukaha	Katu, Tikta	Lagharuksha	Ushna	Katu	Pacify three doshas, Vedanasthapana Asathmikathahara
7. coconut milk	Madhura	Snigda, Guru	Sheeta	Sheeta	Vata Pitta shamaka, Kaphavardhaka
8 Sea salt	Lavana, Madura	Laghu, Snigda	Sheeta		Pacify Vatakapha[7]

### OBSERVATIONS AND RESULTS

- Rasa of this Application contains 87.5% Madhura, 75% Katu, 37.5% Kashaya 25% Tikta, 12.5% Lavana.
- Out of guna Snigdha guna 87.5% , Teekshna 62.5%, Laghu 25% Guru 25% etc.
- 75% drugs contain Ushna veerya, rest are Sheeta virya.
- Out of Vipaka 62.5% Madhura, 12.5% Katu.
- Among the Dosha Karma majority of ingredients have Kapha vata shamaka action and Tridosha shamaka action.

• Shoolahara, Shotahara, Vedanastapana, Angamardaprashmana actions are also presented.

• Some active ingredient compounds are flavonoids, alkaloids, steroids, glycosides, terpenoids, tannins

• That perform antimicrobial, antifungal, anti-inflammatory, analgesic, antioxidant, bone regeneration activity, wound healing activity etc.

### DISCUSSION

Predominant rasas of Eranda Panchanga application are Madura ,Katu ,Kashaya rasa while predominant gunas are Snigda,



*Teekshna and Sukshma guna* which posses *Vedanasthapana* (relieving pain), *Asathmikathahara*(antiinflammatory), *Shot hahara*, (reduce swelling)reduce stiffness etc Malunion is *Kaphavatapredominant* disease when fracture heals in a non-anatomical position which can result in functional impairment to the joint.

Prominent *Ushna veerya* and *Madhura vipaka* possess *shothaharaguna* ( pacify swelling), *srotasshodaka guna* (cleans the channels), *Vedanasthapana* etc.

Prominent pharmacodynamic effect of *Curcuma longa* possess *Asathmikathahara* action, *Vedanasthapana* action etc while sea salt poses *Shothahara action*

The results showed the ingredients of the application are mostly *Kapha vata shamaka* which are potent to pacify malunion condition of joints

Antimicrobial, Antifungal, Anti-inflammatory, Analgesic, Antioxidant, bone regeneration activity, wound healing activity are useful for malunion of bones

#### CONCLUSION:

The collected data revealed that *Eranda panchanga* Application (*Malluma*) pacifies *Kapha Vatadosha*, cleans the obstructed *Srotas*, decalcify bone spurs, reduces pain swelling and stiffness of joints and improves bone regeneration activity. Therefore, it will be a potential remedy for *malunion* of bones. Further therapeutic efficacy of this will be analyzed through a case study. This is the hypothetical view on collaborative action of this application Pharmacology of Ayurvedic drugs could be well explained through the principles of *Panchamahabhuta* and *Rasaadi Panchaka*, after superimposing with *Samanya* (general) and *Vishesha* (Specific) Karma. Accepting *Rasaadi Panchaka* as the pharmacological tools our acharyas has

very well postulated the treatment principles .This is tools are applicable for all treatment modalities. A wise Vaidhya should accurately apprehend these tools to explain the action of individual drugs or formulations.[10]

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**Corresponding Author:**

Dr. K .T .C Dilrukshi, Intern Medical Officer, Institute of Indigenous Medicine , University of Colombo, Rajagiriya, Sri Lanka

Email:chathurikadilrukshi99@gmail.com

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