

**TO EXPLORE THE PROBABLE MODE OF ACTION OF *RASONADI KALKA* IN *BHAGNA* W.S.R. TO BONE FRACTURE: A REVIEW
ARTICLE**

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ABSTRACT

Background: According to *Acharya Charaka*, ultimate aim of life is to achieve the *Dharma, Artha, Kama & Moksha*. For obtaining these goals, it is essential to have state of complete physical, mental and spiritual wellbeing but it is quite difficult due to the various obstacles which are experienced by men during his routine life, *Bhagna* is one of them. It is one of the major problems of present era as the number of *Bhagna* patients are increasing day by day due to increasing accidental cases. In Modern Science, *Bhagna* is read under the heading of Fracture. Normal fracture healing in adults may take around 6 - 8 week during which patient completely go on bed rest which may result in the development of number of complication, such as wasting of muscle, stiffness in joint, deep vein thrombosis, etc. Prolong healing time

causes financial burden and mental stress to the patient. **Aim:** Article is written with the aim to explore an easy to prepare, cost effective herbal Ayurvedic compound formulation from ancient Ayurvedic text and then explore its mode of action in promoting bone healing through Ayurveda and Modern science. **Methodology:** Keeping above aims in mind we selected "*Rasonadi Kalka*" from "*Chakradutta Bhagna Chikitsa*" and then relevant keywords were searched in various Ayurveda and modern texts as well as on online databases to understand the mode of action of individual contents of *Rasonadi Kalka* in accelerating

fractured bone healing in cases of *Bhagna* (bone fracture). **Conclusion:** through literary review, *Rasonadi Kalka* seem to be effective in accelerating fractured bone healing but to establish the final conclusion clinical trial of this drug should be conducted, so that this drug could be used for therapeutic purpose in general patients of fracture.

KEYWORDS: Ayurveda; Complementary and Alternative Medicine, *Asthibhagna*, Herbal formulation.

INTRODUCTION

The word fracture is derived from the Latin word “fractura”, which means discontinuity in a substance. Literally fracture means to break or discontinue. In medical science fracture means break or discontinuity of bone or cartilages.^[1] Fracture is common problem now a day and its incidence is increasing day by day. Depending on the severity of the fracture and how well a person follows their doctor’s recommendations, bones can take between weeks to several months to heal.^[2] The average bone healing time is between 6 – 8 weeks, although it can vary depending on the type and site of the injury.^[3] Patients become bed ridden, immobile or dependent during recovery period and the medications used to cure associated ailments like pain, swelling, etc are not always free of side effects. If the immobile period is long patient may development complications such as wasting of muscle, stiffness in joint, deep vein thrombosis etc. Prolong healing time also causes financial burden and mental stress to the patient. The above problems faced by patients with bone fracture gave us following objectives.

OBJECTIVES

- To search an easy to prepare, cost effective herbal Ayurvedic compound formulation from any ancient Ayurvedic text.
- To understand the mode of action of the selected Ayurvedic compound formulation in promoting bone healing though Ayurveda and Modern science.

METHODOLOGY

Keeping above objectives in mind, after searching various Ayurvedic texts, we selected “*Rasonadi Kalka*” from “*Chakradutta Bhagna Chikitsa*” and then searched relevant keywords in various Ayurveda and modern texts as well as on online databases to understand the mode of action of individual contents of *Rasonadi Kalka* in accelerating healing of fractured bone (*Bhagna*).

ANALYSIS

According to *Ayurveda*, the success of *Chikitsa* depends upon *Chikitsa Chatushpada*- 'the four pillars of treatment' and *Aushadh* (drug) is one of them.^[4] *Acharya Vagbhatta* mentioned four qualities of drug i.e. *Bahukalpam* (suitable to make different products), *Bahugunam* (having many qualities), *Sampannam* (fulfilled with *Uttama Rasa*, *Veerya*, *Vipaka*), *Yogyam* (ability to break pathology).^[5] Keeping above qualities in mind, the formulation was analyzed.

CONTENTS OF RASONADI KALKA^[6]

Table No. 1: Showing the Ingredients of *Rasonadi Kalka*.

Sr. No.	Ingredients	Latin/English Name	Part used	Quantity
1	<i>Rasona</i>	<i>Allium sativum</i>	<i>Clove</i>	1 Part
2	<i>Madhu</i>	Honey	----	1 Part
3	<i>Laksha</i>	<i>Coccus lacca</i>	Resin	1 Part
4	<i>Gau Ghrita</i>	Clarified butter	----	1 Part
5	<i>Sarkara</i>	Sugar	----	1 Part

Method of Preparation- First paste of *Rasona* and *Laksha* was made and then *Madhu*, *Ghrita* and *Sarkara* was added and mixed properly (all ingredients were taken in equal ratio).

Dosage & Anupanam- 5 gram twice a day with one glass cow milk.

ASSESSMENT OF PANCHA PADARTHA OF INGREDIENTS OF RASONADI KALKA

Rasa, *Guna*, *Veerya*, *Vipaka* and *Doshagnata* of each ingredient of *Rasonadi Kalka* and *Anupanam-Gau Dugdha* are presented in tabular form-

Table No. 2: Showing *Pancha Padartha* of individual content of *Rasonadi Kalka*.

<i>Pancha Padartha</i>	<i>Rasona</i>	<i>Madhu</i>	<i>Laksha</i>	<i>Gau Ghrita</i>	<i>Sarkara</i>
<i>Rasa</i>	<i>Pancha Rasa</i> except <i>Amla</i> but <i>Katu Rasa Pradhan</i>	<i>Kashaya Rasa</i> , <i>Madhura Anurasa</i>	<i>Kashaya</i>	<i>Madhur</i>	<i>Madhur</i>
<i>Guna</i>	<i>Snigdha</i> , <i>Tikshna</i> , <i>Pichchhila</i> , <i>Guru</i> , <i>Sar</i>	<i>Ruksha</i> , <i>Guru</i>	<i>Laghu</i> , <i>Snigdha</i>	<i>Snigdha</i> , <i>Guru</i> , <i>Sar</i>	<i>Guru</i> , <i>Snigdha</i>
<i>Veerya</i>	<i>Ushna</i>	<i>Sheeta</i>	<i>Sheeta</i>	<i>Sheeta</i>	<i>Sheeta</i>
<i>Vipaka</i>	<i>Katu</i>	<i>Katu</i>	<i>Katu</i>	<i>Madhur</i>	<i>Madhur</i>
<i>Doshagnata</i>	<i>Kapha-VataShamak</i>	<i>Tridosha-Shamak</i> (Su.), <i>Kapha-Pitta-Shamak</i> (Ch.)	<i>Kapha-Pitta-Shamak</i>	<i>Vata-Pitta-Shamak</i>	<i>Vata-Pitta-Rakta Shamak</i>

Table No. 3: Showing *Pancha Padartha* of *Gau Dugdha* (*Anupanam* of *Rasonadi Kalka*).

<i>Rasa</i>	<i>Guna</i>	<i>Veerya</i>	<i>Vipaka</i>	<i>Doshagnata</i>
<i>Madhur</i>	<i>Guru</i> , <i>Snigdha</i> , <i>Mridu</i>	<i>Sheeta</i>	<i>Madhur</i>	<i>Vata-Pitta Shamak</i>

Assessment of mode of action of *Pancha Padartha* of *Rasonadi Kalka* and *Gau Dugdha*

The ingredients prominently have *Madhur* and *Kashaya Rasa* and *Madhura Vipaka* and prominently have *Guru* and *Snigdha Guna*. These properties prominently pacify vitiated *Vata-Pitta-Rakta*.

According to *Acharya Charaka*, *Madhura Rasa* causes *Sarvadhatu Vivardhana* and is *Balya*, *Brinhan*, *Ksheena-kshata Sandhana Kara*. *Kashaya Rasa* has *Sangrahi*, *Sandhanakara* and *Ropana* properties.^[7]

According to *Acharya Sushruta*, *Madhura Rasa* causes *Bala-Sandhana Krita*, *Kshata-Ksheena Hita*. *Kashaya Rasa* has *Sangrahi* and *Ropana* properties.^[8]

Effect of individual contents of *Rasonadi Kalka***i. *Rasona (Allium sativum)***

According to *Charaka*, *Rasona* is *Vata shamak*.^[9]

According to *Sushruta* it is *Balya*, *Bhagna-Asthi-Sandhankar* and *Shopha-Shoola Nashak*.^[10]

According to *Dhanvantari Nighantu*, it is *Bhagna-AsthiSandhankar*, *Shopha Nashak*.^[11]

According to *Raj Nighantu* it is *Shophagna* and *Rasayana*.^[12]

According to *Bhavprakash Nighantu*, it is *Bhagna-Sandhan-Krit*, *Rasayana*, *Shophaan Hanti*, *Vata Shamaka*.^[13]

According to modern research, it has anti-inflammatory, immunomodulatory, antimicrobial effect, Anti-bacterial effect, Antithrombotic effect.^[14]

ii. *Madhu (Honey)*

According to *Charak*, *Madhu* is *Sandhankrita*, *Rakta-Pitta-Kaphapaham*.^[15]

According to *Sushruta*, it is *Sandhanam*, *Shodhanam*, *Ropanam*, *Krimi-Visha-Prashamanam*.^[16]

According to *Dhanvantari Nighantu*, it is *Vranaropanauttamum*, *Balya*, *Sandhanam*, *Tridoshshamak*.^[17]

Experiments and studies on honey have shown that honey is antiseptic, anti-microbial, anti-inflammatory, anti-toxic, anti-oxidant, healing and cleaning (internal/external), moisturizing and blood-purifying action. It promotes rehydration and is beneficial for all types of skin diseases.^[18]

iii. Lakha (Coccus lacca)

According to *Bhavaprakasa Nighantu*, *Laksha* is *Jwaraghna*, *Vrana Ropak*.^[19]

According to *Dhanvantari Nighantu*, *Laksha* has *Shonitpittanut*, *Vran-hanti*, *Bhut-jwara Hanti* properties.^[20]

According to modern research, it has a great significance in management of joint disorders, osteoporosis, osteomalacia, osteoarthritis etc.^[21] Lac has some amazing benefits in making of bone support capsules. It makes bone stronger and helps in re-gaining natural bone mineral density. It is used for joint disorders and in diseases that occur due to loss of bone mineral density such as osteoporosis and osteomalacia.^[22] It also has anti-inflammatory and anti-infective activity.^[23] *Laksha* has properties like *BhagnaSndhana* (Bone Healing), *Vranaropaka* (Wound healing), *RaktaStambhaka* (Hemostasis).^[24]

iv. Gau Ghrita (Clarified butter)

According to *Acharya Charaka*, *Ghrita* has *Oja Kapha Vivardhaka*, *Vata-Pitta-Jwara Apaham* properties.^[25] It also has *Sanskaranuvartan Guna* (property)^[26] due to which it adopts properties of other drugs. It has *Madhur Rasa* and *Madhur Vipaka*, *Sheet Veerya* due to which *Acharya Charak* consider *Ghrit* as best drug to pacify vitiated *Vata-Pittaj Dosha*.^[27] Having *Madhur* and *Sheeta* properties it helps in pacifying *Pitta* and *Rakta Janya* symptoms like *Shotha* and *Shopha*, etc. and due to *Snigdha* and *Guru* properties it pacifies *Vata* and *Vata Janya* symptoms like *Ruk* (pain).

v. Sarkara (Sugar)

It has *Madhur Rasa* and *Madhur Vipaka*, *Sheet Veerya* and *Guru*, *Snigdh Guna*

According to *Charaka*, it is *Vrishya*, *Ksheen-kshata Hita*.^[28]

According to *Sushruta*, it is *Sheeta*, *Snigdha*, *Guru*, *Madhur*, *Vrishya*, *Rakta-Pitta Prashamanam*.^[29]

Effect of Anupanam- Gau Dugdha (Cow Milk)

According to *Acharya Charaka*, *Gau Dugdha* is *Pravar-jeevaniyanaam* and *Rasayanam*.^[30]

Gau Dugdha is *Balya*, *Brihan*, *Sandhanam*, *Shrestham Ksheena-Kshateshu* and cures *Vatapittaj Vikar*.^[31] Its properties being similar to *Ojas*, it promotes body immunity and helps in rejuvenating the body.

Milk contain all the elements necessary for the growth and nutrition of bone, nerve, muscles and other tissue. Milk also contains vitamin which are natural antidotes to rickets and other condition due to mal-nourishment. It contains a large proportion of calcium, phosphates, sodium chloride and a trace of iron etc.

Assessing Overall Mode of Action of *Rasonadi Kalka*

- *Rasona (Allium sativum)* is *Vata Shamak* which decreases *Shula* (pain) and *Shopha* (swelling). It has anti-inflammatory effect helping in early reunion of fractured bone.
- *Madhu* (Honey) and *Lakha (Coccus lacca)* has *Kashaya Rasa* which according to *Ayurveda* has *Sandhanakara* property which may have reduced fracture healing time and showed *Asthi-Sandhaniya* effect.
- *Gau Ghrita, Sarkara* and its *Anupan Gau-Dugdha* has *Madhur Rasa, Madhur Vipaka, Sheet Veerya* and *Guru, Snigdha* properties which increases *Bal* and *Ojas* in the body and helps in *Asthi Dhatu* (Bone) rejuvenation and reunion.

CONCLUSION

After researching the literature to understand the mode of action of all ingredients of *Rasonadi Kalka* and its *Anupanam- Gau Dugdha*, this compound Ayurvedic formulation seem to be effective in early healing of fractured bone, also the drug is cost effective and easy to prepare. This formulation can be prepared by Ayurvedic physician himself or can be prepared by attendant after getting proper instruction from the physician. But before establishing it as an effective medicine which may accelerate bone healing & remodeling and as a remedy to decrease immobile period, this drug should undergo clinical trial.

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