



FORMULATION AND SENSORY EVALUATION OF DELONIX ELATA LEAVES INCORPORATED DHAL POWDER TO PREVENT RHEUMATOID ARTHRITIS

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ABSTRACT

The delonix elata leaves powder was studied for its effect of anti-inflammatory property. Delonix elata leaves was collected, washed thoroughly, sun dried for 2 days and finely ground into powder. The delonix elata leaves powder was used in dhal powder with 3 variations of each 5%, 10%, 15% respectively. The standard dhal powder and the 3 variations were given to 20 panel members and found the highest acceptability. Of all the variations variation 1 with 5% delonix elata leaves powder incorporated dhal powder had the highest acceptability.

Keywords: Anti-inflammatory, Delonix elata leaves, Rheumatoid Arthritis.

INTRODUCTION:

Rheumatoid arthritis is a chronic inflammatory disorder affecting many joints, including those in the hands and feet. In rheumatoid arthritis, the body's immune system attacks its own tissues, including joints. In severe cases, it attacks internal organs (**Khalid Bander Almutairi et al., 2020**).

The cause of Rheumatoid arthritis is something seems to trigger the immune system to attack your joints and sometimes, other organs. Some experts says a virus or bacteria may change your immune system, causing it to attack your joints (**Melinda Ratini et al., 2021**).

Sedentary lifestyle and changes in dietary habits have led to sharp raise in the prevalence of arthritis. Nearly 40% of the people, including a sizeable number of youths, are suffering from this disease, say leading medical practitioners. (**B K Mishra et al., 2021**). Rheumatoid arthritis is an autoimmune disease affecting 1% of the world's population causing permanent deformation of the affected joint (**Priyanka Vaghela et al., 2020**).

In India approximately 1% of the population suffers from rheumatoid arthritis. Therefore, as per calculations almost 10 lakh people suffer from this type of arthritis (**Vasant Kunj et al., 2021**).

Inflammatory diseases including arthritis and rheumatism are major group of prevalent diseases. Inflammation is the complex biological response of vascular tissues to harmful stimuli including pathogens, irritants or damaged cells. Many substances, interfering with the inflammatory response have been isolated from medical plants (**Jim Morelli et al., 2021**).

Extract of leaves of delonix elata contains terpenoids, flavonoids, steroids, phenols, cardioglycosides, quinines, coumarins and tannins. The ethanolic extract of leaves of delonix elata is evaluated for anti inflammatory activity by human red blood cell membrane stabilization method and their activities or comparable to that of the standard drug aspirin (**B Amala & T V Poonguzhali et al., 2015**).

The leaf extract of delonix elata also showed significant anti-inflammatory action compared to control but it was lower than the effect of bark extract. Compounds like bioflavonoids are reported to produce anti-inflammatory action by decreasing capillary permeability. Steroids are known to produce anti-inflammatory activity. The extract tested might contain flavonoids

or steroids which resulted in producing anti-inflammatory activity (R V Krishna Rao, Ganapathy P Mallikarjuna Rao, B Ganga Rao et al., 1997).

Some of the other benefits of Delonix elata Leaves are used for the treatment of bronchitis in infants, fever, malaria, flatulence, and paralysis or as carminative.

CLASSIFICATION OF DELONIX ELATA:

Kingdom	Plantae
Subkingdom	Viridiaeplantae
Phylum	Tracheophytes
Class	Equisetopsida C. Agardh
Order	Fabales
Family	Fabaceae
Subfamily	Caesalpinioideae
Genus	Delonix
Species	Delonix elata (L.) Gamble

SELECTION, PROCUREMENT AND PROCESSING OF RAW MATERIALS:

Selection, procurement of delonix elata leaves:

In this process of making a health mix from components that has delonix elata as a main ingredient and other pulses and cereals as other ingredients as the substituent and a simple and easy method for bringing up the ingredients as a mix.

Treatment of delonix elata leaves:

The Delonix elata leaves are taken or bought for a moderate rate from a local shop or market and cleansed thoroughly for removal of dirt. Then, the Delonix elata leaves are dried of from moisture content and taken in a clean and dry tray of good convenience.

Preparation of delonix elata leaves Powder:

The Delonix elata leaves in the plate are left outside in a free area for sun-dry to be natural for consumption for about a time of 2-3 days.

After this, the dried Delonix elata leaves are ground into a fine powder which is then ready for the health mix.

Storage of Delonix elata leaves:

Delonix elata leaves powder was stored in an air tight container for the development of food product and for the analysis of nutrients.

Procurement of other ingredients:

The other ingredients added to prepare the food products are Red gram dhal, green gram dhal, black gram dhal, dry red chilli, cumin seeds, pepper and asafoetida.

STANDARDISATION AND FORMULATION OF DELONIX ELATA LEAVES POWDER INCORPORATED DHAL POWDER:

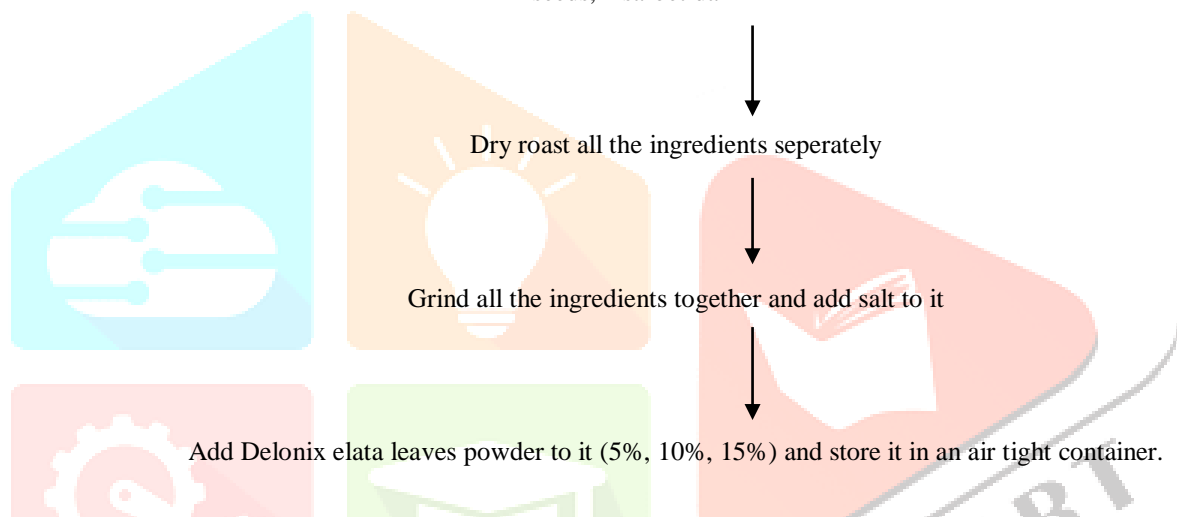
A Standard delonix elata leaves powder incorporated dhal powder was prepared using various natural ingredients which are locally available such as Red gram dhal 45g, Dry Red chillies 2g, Black pepper 1g, Cumin seeds 2g and a pinch of Asafetida without Delonix elata leaves powder

Delonix elata leaves powder incorporated dhal powder was prepared in three variations. 1 variation containing Red gram dhal 40g, Dry Red chillies 2g, Black pepper 1g, Cumin seeds 2g, a pinch of Asafetida and delonix elata leaves powder 5g and another variation containing Red gram dhal 37.5, Dry Red chillies 2g, Black pepper 1g, Cumin seeds 2g, a pinch of Asafetida and delonix elata leaves powder 7.5g and another variation containing Red gram dhal 35g, Dry Red chillies 2g, Black pepper 1g, Cumin seeds 2g, a pinch of Asafetida delonix elata leaves powder 15g.

PREPARATION OF DELONIX ELATA LEAVES POWDER INCORPORATED DHAL POWDER:

Flow chart for the preparation of Delonix elata leaves powder incorporated Dhal powder:

Red gram dhal, Green gram dhal, Black gram dhal, Dry Red chillies, Curry leaves, Black pepper, Cumin seeds, Asafoetida



RESULT AND DISCUSSION:**STANDARDISATION AND FORMULATION OF DELONIX ELATA LEAVES POWDER INCORPORATED DHAL POWDER: (50 g)**

S.No	Ingredients	Standard (g)	Variation 1 (g)	Variation 2 (g)	Variation 3 (g)
1	Red gram dhal	15	12.5	10	7.5
2	Black gram dhal	15	15	15	15
3	Green gram dhal	15	15	15	15
4	Dry Red chillies	2	2	2	2
5	Black pepper	1	1	1	1
6	Cumin seeds	1	1	1	1
7	Curry leaves	1	1	1	1
8	Asafoetida	A pinch	A pinch	A pinch	A pinch
9	Delonix elata leaves powder	-	2.5	5	7.5
	TOTAL (g)	50	50	50	50

S- Standard, V1- Variation 5%, V2- Variation 10%, V3- Variation 15%.

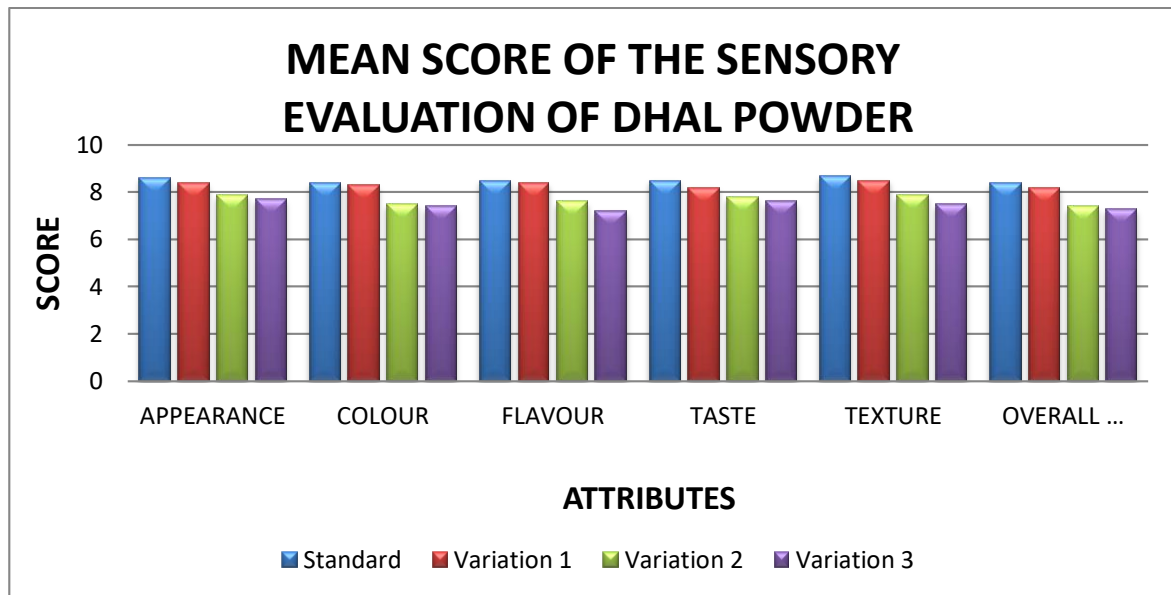
MEAN SCORE OF THE ACCEPTABILITY OF DELONIX ELATA LEAVES POWDER INCORPORATED DHAL POWDER

SAMPLE	MEAN ± STANDARD DEVIATION
1 Standard	8.7 ± 0.5
Variation – 1	8.2 ± 0.4
Variation – 2	7.4 ± 0.8
Variation – 3	7.3 ± 0.9

S- Standard, V1- Variation 5%, V2- Variation 10%, V3- Variation 15%.

The overall acceptability of Delonix Elata leaves powder incorporated Dhal powder revealed that the variation 1 has got the highest mean score of . The least accepted sample were V3 with a mean score . The mean score of the Variation 1 is higher than all the variations.

MEAN SCORE OF THE SENSORY EVALUATION OF DELONIX ELATA LEAVES POWDER INCORPORATED DHAL POWDER



The mean score of the sensory evaluation showed that Delonix elata leaves powder incorporated dhal powder, the variation 1 has better appearance of (8.4), color (8.3), Flavor (8.4), Taste (8.2), Texture (8.5), and overall acceptability (8.2) among all the other variations. Of all the Dhal powder with the incorporation of Delonix Elata leaves powder at 5% had the highest level of overall acceptability.

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