



# Phytomedicine is special reference to MUSTARD(*Brassica juncea*)

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**Abstract:** Mustard is a vegetable from the cruciferous family that is commonly utilized around the world. Mustard is not only used as a spice but also finds its place in folk medicine. It is rich in essential vitamins, minerals, fiber and a large number of secondary components such as allyl isothiocyanate and 3-butyl isothiocyanate. The phytochemicals found in plants are influenced by various factors such as various plant species, the environment they thrive in, the process of extracting them, and the techniques employed in food processing. These factors play a role in determining the specific chemical composition of these phytochemicals. Moreover, mustard has been found to exhibit numerous pharmacological effects. The effects of this substance include its ability to fight against oxidation, reduce inflammation, and act as a bacteriostatic and antiviral agent. Mustard also appeared employed in the treatment of various ailments including cancer, depression, diabetes, and obesity. Providing a comprehensive overview, this review encompasses the plant attributes, classifications, origins, worldwide distribution, and various methods of consuming Mustard. Additionally, it sheds light on the phytochemical composition and biological functions of this plant.

**Key word:** Mustard, chemical component, part of mustard, growth, yield.

## Introduction:

In the realm of the cruciferous family, a regal presence emerges into form of Mustard. This exquisite annual herb, adorned with a multitude of titles including oriental mustard, chinese mustard, vegetable mustard, and leaf mustard, graces the culinary world with its refined essence. Mustard is an affordable and nourishing food that comprises of bioactive elements like glucosinolates and their byproducts, along with polyphenols such as flavonoids and anthocyanins. Additionally, it is rich in volatile component, ascorbic acid, dietary fiber,  $\beta$ -carotene, minerals, and

chlorophylls. The unique and intense hot taste of mustard renders it a popular choice as a spice. Moreover, mustard possesses significant medicinal properties, with its leaves being employed as an expectorant, diuretic, and stimulant in traditional drug. Particularly, the mustard has arrived scientifically proven to provide diverse benefits and health contribute to the protection of various diseases. Mustard, despite being a member of the cruciferous vegetable family, has surprisingly received little attention in terms of its phytochemistry and biological activity. While there are countless reviews available on other cruciferous vegetables, the study of mustard has been largely overlooked.

### **BOTANICAL NAME- BRASSICA NIGRA**

- **FAMILY OF MUSTARD -BRASSICACEAE**
- **Common name:** Rape, sarson, Sondha, Mustard, Mali, Toria, Rai.



Fig1.1 plant of mustard

### **History of mustard:**

Mustard condiment made from this seed from different plants in a brassica and synapsis genera. It has been used as a spice and a medicine since ancient time according to the web search result, her brief history of mustard:

- The earliest evidence of mustard cultivation date by two 3000 BCE in Indus valley.
- The ancient Greeks and Romans use mustard as a condiment and a remedy for various elements.
- The romans brought mustard gaul, where it was cultivated by the monks and later became a speciality of Dijon.
- In the 18<sup>th</sup> century mustard become a fashionable sauce in France and England, and was used meat, cheeses, and vegetables .
- In the 19<sup>th</sup> century, mustard production became industrialized, and new variety of mustard were developed, such as yellow mustard in America and the sweet mustard in Germany.
- In the 20<sup>th</sup> century, mustard became a global commodities, and use in various accuse needs, such as Chinese Indian and cajuh.

### **Properties and origin plants mustard seeds**

1. **Mustard's origins and global presence:** For countless centuries, mustard has thrived in diverse corners of Eurasia, adapting seamlessly to both subtropical and temperate environments. Its roots can be traced back to Central Asia, particularly the northwestern regions of India. From there, it spread to eastern China, Iran, India, central and western China, Myanmar, in particular, stands as the birthplace of various mustard varieties, with Sichuan Province

showcasing the most remarkable diversity and distinctiveness. This versatile plant is incorporated into the diets of several countries including Pakistan, Japan, Nepal, Africa, Italy, India, China, Bangladesh and African Americans. In the United States, common types of mustard include brown mustard, Abyssinian mustard, and (Brassica besseriana).

2. **Plant properties:** Mustard plants have the ability to grow up to a height of 150 cm. The stems and leaves of young mustard plants are covered in bristles, with the stems standing upright. The lower leaves are smaller in size and have notched or toothed edges. Amidst the verdant foliage, the upper leaves gracefully take the form of narrow-lanceolate blades, adorned with delicately sparse toothed or smooth edges. In the realm of mustard plants, a mesmerizing spectacle unfolds as they burst into bloom, casting their vibrant hues upon the world from the enchanting months of March to May. As nature's symphony plays on, these remarkable plants bear the fruits of their labor, bestowing upon us their bountiful harvest from the ethereal realm of May to June. Such is the nature of their ephemeral existence, a testament to their ability to flourish within a brief and fleeting growing period. Mustard can be harvested just 30 days after sowing. The ideal temperature range for mustard growth is between 15 and 22°C.
3. **How to eat:** Asian mustard is commonly utilized for frying or pickling, while mustard leaves are predominantly employed in African culinary traditions. In Nepali cuisine, all parts of the mustard plant are utilized, particularly in the mountainous regions of Nepal, where it is incorporated into a dish known as sarson da saag (mustard leaves). Mustard can also be made into a salad, cooked with ham or salt pork, and can be used in soups and stews. The exquisite pickled tubers extracted from the mustard plant have gained international acclaim as one of the most esteemed delicacies across the globe. In Korea, the art of fermenting mustard elevates it to the esteemed title of kimchi, while in Nepal, it is known as achar, and in China, it is celebrated as the delectable pickle zha cai. The refined Japanese cuisine reveres it as Takana, skillfully marinating it to grace rice balls or impart its tantalizing essence as a seasoning. Furthermore, this esteemed ingredient finds its way into the heart of Russian culinary traditions, enriching a myriad of canned, baked, and margarine creations. Notably, a substantial portion of Russia's culinary repertoire owes its distinctive flavor to the mustard plant, as it serves as the foundation for their renowned table mustard sauce.

**Table 1.1 Name of mustard**

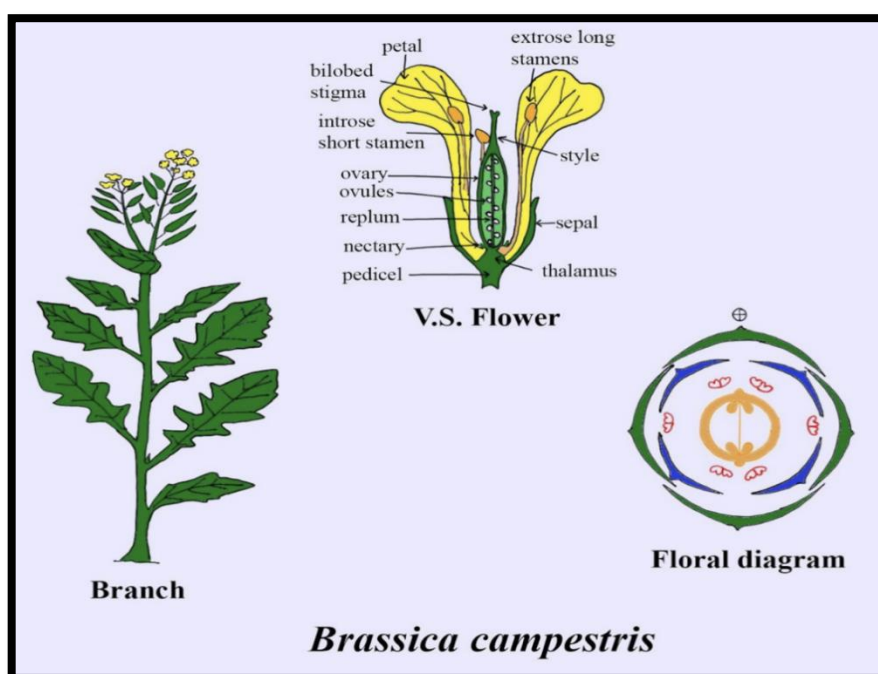
Taxonomic Name	Common name	Hindi Name	Usage
Brassica juncea	Indian / brown mustard	Rai, raya, laha	Oil seed
Brassica nigra	Black mustard	Banarasi Rai	(more pungent)
Brassica alba	White/ yellow mustard		Larger seed
Brassica tournefortii	Wild mustard	Jungle Rai	Oil seed
Brassicacarinata	Ethiopian mustard	Karan Rai	Oil seed

## PART OF BRASSICA NIGRA

- This exquisite plant is an annual herb, known for its elegance and grace. Its root system is characterized by a taproot, providing stability and nourishment. The stem, herbaceous and erect, stands tall with its branches, creating a captivating sight. Its cylindrical and solid structure adds to its luxurious appeal.
- The leaves, simple and sessile, enhance its beauty with their exstipulate nature and reticulate venation. The inflorescence of this plant can be either racemose or in a typical raceme form, adding a touch of sophistication.
- The flowers, ebracteate and pedicellate, are a sight to behold. They are actinomorphic, bisexual, and complete, with a tetramerous hypogynous arrangement.
- The exquisite calyx is composed of four resplendent sepals, each adorned with a multitude of petals, elegantly arranged in two alternating whorls of two sepals each. Their intricate overlapping pattern, known as imbricate

aestivation, bestows upon them an unparalleled allure, captivating all who behold their enchanting presence. As the appointed moment arrives, these majestic sepals gracefully descend, bidding farewell to their ephemeral existence with a graceful dance, leaving behind a trail of ethereal beauty.

- The corolla, with its four polypetalous petals, adds a burst of color to this already stunning plant. Positioned elegantly in a solitary spiral, gracefully interchanging with the sepals, every petal exudes a distinct charm as it unveils its intricate structure. Each petal showcases a remarkable distinction, with a slender and refined lower section known as a claw, while its upper portion blossoms into a lavish and expansive limb, gracefully extending outward. These clawed petals, with their valvate aestivation, exude elegance.
- The androecium of this plant boasts 2-4 stamens, polyandrous and tetradynamous in nature. The stamens on the outer and inner side are small and lateral in size, while the four inner stamens have a larger size and are antero-posterior in size. The anther is diaphysis, basiphix, and introse, adding a touch of intricacy to this already luxurious plant.
- The gynoecium, bicarpellary and syncarpous, showcases a superior ovary. Though initially unilocular, Its fake septum causes it become bilocular. Each locule holds a single ovule or many, with parietal fertilization. Short hair and a bifid stigma are the styles., completing the allure of this magnificent plant.



**FIG1.2 Part of mustard.**

## Types of Mustard.

In the realm of *Brassica nigra*, three exquisite varieties of seeds reign supreme: the resplendent yellow, the majestic brown, and the enigmatic black. Each of these mustard marvels is meticulously crafted by blending a precise ratio of these extraordinary seeds. However, it is only when these ground seeds are harmoniously united with a liquid that the true essence of mustard is unveiled. This captivating alchemy, a delightful chemical reaction, is undoubtedly a phenomenon that we all can marvel at and appreciate.

1. **American yellow mustard:** Mustard, also known as American Yellow Mustard, is a staple condiment that we all recognize. It's the perfect addition to hot dogs, potato salad, and countless other dishes. Chances are, you have a bottle of it in your fridge at this very moment. Made from yellow mustard seeds and vinegar, this mild mustard gets its vibrant yellow hue from turmeric. It's a great choice for those who prefer a milder flavor and a great way to introduce your taste buds to the world of mustard.

2. **Dijon mustard:** Dijon, a condiment of elevated sophistication, surpasses the ordinary yellow mustard in its refined essence. Unlike its counterpart, where mustard seed is blended with vinegar, Dijon embraces the elegance of white wine, infusing it with a distinctive character. The transformation of the mustard seeds from yellow to a rich brown hue imparts a boldness that elevates any culinary creation that calls for the utilization of this exquisite condiment.
3. **Spicy Brown Mustard:** If you've been wondering, this particular mustard variety is created using coarsely-ground brown mustard seeds. It offers a spicier kick than your usual yellow or Dijon mustards. The "spice" in spicy mustard comes from a blend of turmeric and a mix of spices commonly found in pumpkin pie, including allspice, ginger, cinnamon, and nutmeg. This type of mustard is commonly found in delis, making it an ideal choice for meat lovers. Give it a try with this straightforward pork chop recipe and see for yourself.
4. **Yellow Mustard Seed:** Yellow mustard, also known as *Sinapis alba*, is renowned for being the primary component in the classic hotdog mustard found in North America. This particular variety of mustard is extensively cultivated and boasts a pleasantly mild taste.
5. **Brown Mustard Seed:** Brown mustard, also known as *Brassica juncea*, boasts a rich, dark brown seed coat and is predominantly utilized in the creation of Dijon style mustards. Renowned for its fiery taste, brown mustard adds a delightful kick to dishes and is often blended with yellow seeds to produce the beloved English style mustards.
6. **Oriental Mustard Seed:** Oriental mustard, also known as *Brassica juncea*, is characterized by its vibrant golden yellow seed coat. This variety of mustard seeds is renowned for its intense piquancy, making it a popular choice in Asian cuisine, particularly in Japanese dishes. Additionally, it serves as a valuable source of cooking oil in various Asian countries.



**Fig 1.3 Types of mustard.**

## Benefits of Mustard

1. Mustard seeds possess potent anti-inflammatory properties that make them effective in combating psoriasis, a chronic inflammatory autoimmune disorder. These seeds are considered a valuable component in future psoriasis treatments due to their ability to stimulate beneficial enzymes and promote healing against psoriasis-induced lesions.
2. When it comes to contact dermatitis, mustard seeds offer therapeutic relief by addressing the symptoms associated with this condition. Consuming mustard seeds aids in the healing of tissues and reduces ear swelling, providing much-needed relief from the itchy rash that develops upon contact with an allergen.

3. Mustard oil, derived from mustard seeds, is recognized as a healthier alternative to other cooking oils, particularly for heart health. This is attributed due to the existence of omega-3 fatty acids in mustard oil, which contribute to its beneficial effects on cardiovascular well-being.
4. The heat-generating properties of mustard seeds have long been utilized to alleviate cold and sinus problems. By clearing the mucus in the air passage, mustard acts as a natural remedy for these respiratory issues.
5. Mustard possesses properties that can induce redness, making it an effective analgesic when applied as a plaster. This application can provide relief from muscle aches. However, caution must be exercised as direct application of mustard plaster on the skin may cause sore blistering due to its warming effects.
6. Mustard products contain antioxidants that offer protection against infections caused by various bacteria and fungi. Additionally, these products are utilized in skin and hair care due to the richness of mustard seeds in Vitamin A and omega-3 fatty acids.
7. Organic Products India is a renowned manufacturer and exporter of mustard seeds worldwide. We are also recognized as one of the leading suppliers of Organic Brown Linseed, Amaranth seeds, Psyllium seeds, Psyllium husk, Psyllium husk powder, spices, and more.

**Conclusion:** The remarkable surge in oilseed production can be attributed to the advancement of high-yielding varieties, coupled with enhanced production technology. In order to meet the ever-increasing demand for oil in the nation, the gap must be bridged through effective management techniques. The vertical expansion in mustard production can be achieved by harnessing the available genetic resources with the aid of breeding and biotechnological tools, which will ultimately shatter the barriers limiting yields. Similarly, horizontal growth in rapeseed-mustard cultivation can be achieved in those areas or districts where the yield falls below the national average. It is imperative to develop production technologies for various agro-ecological cropping systems, taking into account different crop growing situations such as intercropping, salinity, rainfall, and other unutilized farm situations like rice-fallows. Additionally, mustard can be cultivated after cotton, sugarcane, soybean, and other crops, and can also be paired with lathyrus, lentil, or any other competing rabi crop in both traditional and nontraditional areas.

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