



# UTILIZING CATHARANTHUS ROSEUS LEAVES IN A HUMAN-CONSUMPTION PROCESS

( NITHYAKALYANI ) ( MADAGASCAR PERIWINKLE )

Dr Aakash.S

Department of Food Technology

Dhanalakshmi Srinivasan engineering College, Perambalur

email address : aakashpriya77@gmail.com

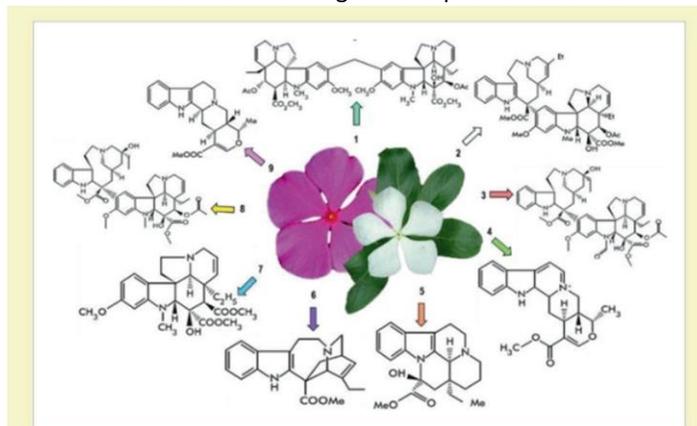
**Abstract** - Ayurveda is a well-known traditional Indian medical system that addresses one of the most significant therapeutic qualities of plants. In Ayurveda, Catharanthus roseus is also referred to as a plant. It comes from the island of Madagascar and is an evergreen. The anti-diabetic, anti-tumor, antioxidant, anti-mutagenic, and antibacterial properties of this substance are well established. It mostly generates vaccine, resperine, vinblastine, ajmalcine, vincristine, and raubesine out of the 130 alkaloids it produces. Skin cancer, breast cancer, lymphoblastic leukaemia, and Hodgkin's disease are just a few of the cancers that are treated with vincristine and vinblastine. Due to its endangered status, it needs to be conserved through measures like micropropagation. It should be utilised widely because it has various medical qualities. Since many of the currently existing anti-microbial medications are no longer effective against most bacterial pathogens, Catharanthus roseus (periwinkle) is a crucial medicinal plant for new pharmaceuticals. This study attempts to look into some of this plant's anti-microbial characteristics. The main focus of all studies has been Catharanthus roseus' anticancer abilities. Salmonella typhimurium NCIM 2501, Pseudomonas aeruginosa NCIM 2036, and Staphylococcus aureus NCIM 5021 have been used to test the antibacterial activity. The results demonstrate that various diseases, some of which can be as severe as an epidemic, can be prevented by using extracts from this plant's leaves.

**Keywords** : C.roseus tablet , capsule , powder. Nithyakalyani, Madagascar Periwinkle. Cancer and blood pressure, Manufacturing process and Methodology.

## 1 INTRODUCTION

The majority of plants, fruits, and flowers in the world, including the roses we all like, are only available during specific seasons. These are only accessible at particular times. The vast majority of plants in the world adhere to this standard. The immortal Kalyani plant blossoms in every season. Nithyakalyani is the name of the plant, and it blooms every day with lovely blossoms. "Kalyani" means flowering and "Nithya" implies every day. The best herb among Tamil herbs sold to other countries is Nithyakalyani. Other names for it include porcelain flower plant, Kaka flower plant, and firewood flower plant. The plant Nityakalyani comes in two varieties. Despite having the same structure, some plant species have white flowers. The upper petals of the blooms of other kinds of plants have a slightly pink hue. This plant is native to Madagascar and is found there in an environment similar to our own. This is a result of slash-and-burn agriculture's degradation of natural ecosystems. This herb has a height of around a metre. In two months, grows to a height of 60 to 80 cm. Its oblong leaves range in size from 2.5 to 9 cm long and 1 to 3.5 cm broad. These large leaves have a shiny, glabrous surface, the opposite of leaves. Petiole leaf width of 1.8 to 1 cm. Mid vein has a light green hue. Its

Pods are about an inch long, resemble drumsticks in form, and are roughly the thickness of a fairly thick wire. These seeds usually germinate quickly. Growing it doesn't take a lot of work. It will grow and proliferate on its



Alkaloids produced by *Catharanthus roseus* (1) vindolicine ( $C_{51}H_{64}N_4O_{12}$ , 925.08 g/mol); (2) anhydrovinblastine ( $C_{46}H_{56}N_4O_8$ , 792.97 g/mol); (3) vincristine ( $C_{46}H_{56}N_4O_{10}$ , 824.95 g/mol); (4) ajmalicine ( $C_{21}H_{24}N_2O_3$ , 352.43 g/mol); (5) tabersonine ( $C_{21}H_{24}N_2O_2$ , 336.44 g/mol); (6) catharanthine ( $C_{21}H_{24}N_2O_2$ , 336.42); (7) vindoline ( $C_{25}H_{32}N_2O_6$ , 456.53 g/mol); (8) vinblastine ( $C_{46}H_{58}N_4O_9$ , 810.97 g/mol)

own. The plant known as Nithyakalyani is frequently found growing alongside roadsides in both urban and rural settings. It is crucial that more groups ingest the leaves of *C.roseus*. It should be consumed either fresh or dry.

Dry leaves can be stored and used repeatedly for an extremely long time. Many companies across the world manufacture a wide range of *C. roseus* leaf products, including catharanthus roseus tea, tablets, capsules, leaf powder, soaps, and face wash. Additionally, the market offers a few drinks prepared from Madagascar periwinkle leaves.

Therefore, it is necessary to dry and prepare Madagascar periwinkle leaves in a sanitary manner. We have explained how fresh *C.roseus* leaves are converted into dried form in this post for human use.

## 2 METHODS OF PREPARATION MATERIALS

### 2.1 Leaf Harvesting

The plant that was available in the residential area was collected early in the morning for its fresh catharanthus roseus leaves. Harvesting leaves Making dried leaf powder can be done with both young and old leaves. The morphology of leaves can be distinguished as follows: Erect, laxly branched, with long, flexible branches, purple or light green in colour. The leaves are simple, cauline, opposite, ex-stipulate, petiolate, elliptic to oblong, 4-10 by 2-4 cm, glabrous to pubescent, with 10–12 pairs of lateral nerves. They are also ovate to oblong in shape. Catharanthus leaves can readily lose moisture after being harvested, so if at all feasible, harvest in the morning and finish the first stage of processing the same day.

### 2.2 Selection of healthy leaves

A variety of fungi, including *Fusarium solani*, *Macrophomina phaseolina*, *Nigrospora sphaerica*, and *Colletotrichum sp.*, produce spores that cause brown spots on leaves and eventually turn them brown



Figure 1: catharanthus roseus leaves powder

and kill them. On leaves, grasshoppers, crickets, and caterpillars are the most frequent pests, aside from fungi. So, immediately following the collection of fresh leaves, diseased and damaged leaves are carefully destroyed.

### 2.3 Washing

Washing Until all dirt is removed, collected leaves are rinsed with running tap water. To get rid of germs, leaves are then immersed in 1 percentage saline solution (NaCl) for 5 minutes. The leaves are then thrice rinsed with distilled water before being washed again with 70 percentage ethanol. This process is essential for getting rid of the dust, pathogens, and microorganisms that are on the surface of the leaves.

### 2.4 Draining

Draining Spreading the leaves in the sun for a short time will help eliminate any excess water from the surface of the leaves.

### 2.5 Drying

Only 20–40 percentage of vitamin C is thought to be maintained when leaves are dried in direct sunshine, whereas 50–70 percentage is thought to be retained when leaves are dried in the shade. High temperatures may cause the protein in the leaves to break down. Consequently, it is advised to dry in the shade. In a well-ventilated space, distribute the leaflets on the sterile, clean green net. Because these materials provide a space between the floor and the leaves, mosquito net may be utilised for this purpose. This space ought to be dust, rodent, and insect-free. Using floor and ceiling level vents that are covered with a clean filter to keep the sun and dust out will increase air circulation. It is feasible to use a fan, but it must not be pointed directly at the leaves, as this can enhance airborne microbial contamination. To improve consistent drying, it is advised to turn the leaves over at least once while wearing sterile gloves.

The greatest amount of time for leaves to dry out entirely is four days. There shouldn't be a loading density more than 1 kg/m<sup>2</sup>. Every person involved in this phase is required to maintain their personal hygiene and cleanliness while performing their duties. It is mandatory to wear personal protection equipment (PPE) at all times, including head coverings, disposable gloves, and nasal masks.

### 2.6 Grinding

Dried leafs can be finely ground using a pulverizer machine or a mortar and pestle on a small scale. For the separation of the finely ground leaf powder, pore size screens with a range of 0.5 mm to 1.0 mm are frequently used.

### 2.7 Drying of the leaf powder

Leaf powder is dried before use. The powder made from *Catharanthus roseus* leaves can retain moisture even after being ground, and it does so instantly. The moisture content of *C. roseus* leaf powder should be reduced as a result by drying it at 50 °C for 30 minutes. The nutrient content will decrease if powder that has been stored is exposed to heat or light. Under the following circumstances, clean, dried powder stored in airtight containers, shielded from light and humidity, and maintained below 24 °C (75.2 °F) can be preserved for up to 6 months.

## 3 HOW TO SIP NITHIYAKALYANI, ALSO KNOWN AS MADAGASCAR PERIWINKLE

Morning 100 ml of water should be added to 5 grammes of powder. A few minutes, then boil the ingredients. Drink the filtered water as soon as it warms up, before any meals. After dinner, follow the same procedure for the evening dose. After drinking, take some sugar and honey if you have any bitter or sour flavour.

## 4 BENEFITS

The herb is used to cure inflammation, chest pain, diarrhoea, and throat issues. Additionally, it's utilised to avoid toothaches and fluid retention, or edoema. Nithya kalyani also purifies the blood and supports a stronger immune system.

Powder that is Pure Natural In addition, the powder's active components may enhance blood circulation and blood clotting. With no additional tastes or preservatives, and no allergies.

### 4.1 HEALTH BENEFITS:

#### 4.1.1 CANCER

They were shocked to learn that periwinkle is used to treat diabetes. They didn't anticipate that the extract would destroy re-cell cultures. Their extract identified two alkaloids that reduced blood cell counts, and subsequent investigation revealed that after significant research, medicines were produced and are currently used globally to treat specific forms of cancer. The strong alkaloids vincristine and vinblastine, which are found in Madagascar periwinkle, may be able to treat malignancies including leukaemia and Hodgkin's disease.

#### 4.1.2 TO HEAL WOUNDS

Periwinkle can successfully control excessive bleeding in addition to being used to treat wounds. External applications are common with this kind of treatment. If you are unable to find the necessary leaves in this location, you can still gather them, dry them in the sun, then boil the dried leaves in water and apply them to wounds. You may make a potent ointment to treat cuts, scratches, and wounds by boiling fresh leaves in unrefined oil.

#### 4.1.3 DIABETES

Periwinkle is used to treat diabetes in many regions of the world, but because it can drop blood sugar levels, pregnant women and nursing moms should absolutely avoid it. Replace your usual tea with periwinkle tea every now and then. Because the powder's alkaloids are so deadly, it should never be used excessively. Periwinkle is a herb that you should only use under a doctor's supervision if you wish to manage your diabetes because taking it in excess of the recommended dosage can have negative side effects.



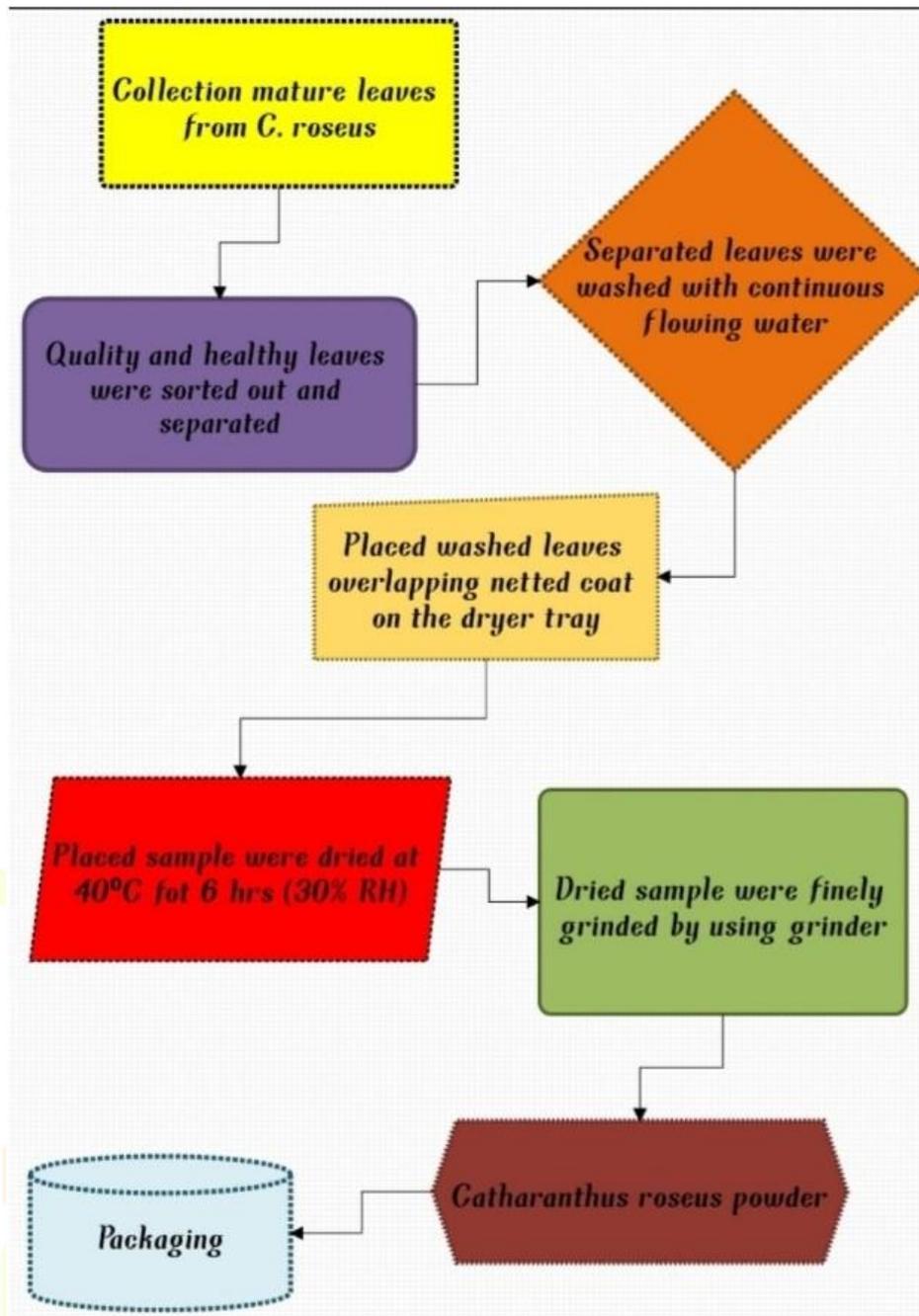


Figure 2: Flowchart

## 5 ADVERSE EFFECTS

You can use this product throughout pregnancy without experiencing any negative side effects, but you should consult a doctor first.

## 6 METHODS OF HARVESTING AND FABRICATION

Natural herbal powders are guaranteed since all herbs are 100 percentage naturally picked, dried, and ground without the use of chemicals.

## 7 METHODS OF C.ROSEUS TABLETS

### Tablets Made From C.roseus Leaves

The ultimate natural, organic energy and endurance superfood is C. roseus tablets. Catharanthus roseus Tablets are produced from 100 percentage Pure C.roseus Leaf Powder. Since C.roseus leaves are the plant's most nutrient-dense component, we employ 100 percentage pure leaf powder in our tablets to provide the greatest benefit to the users. Each tablet contains 500 milligrammes of pure C.roseus powder.

### RAW MATERIAL

Only fresh green leaves are utilised as raw materials in the manufacturing process, or you may also include green leaves, maize starch, and acacia gum. The following procedures are used in the production of catharanthus roseus tablets:

(Or)

Fresh green leaves alone, or green leaves plus maize starch and acacia gum, are the only raw materials used in the manufacturing process. Catharanthus roseus tablet production involves the following steps:

#### 7.1 TYPES OF DRYING METHODS

- 7.1.1 Natural Dryers
- 7.1.2 Mechanized Dryers
- 7.1.3 Solar Drying, Tray Drying , Cabinet and Tunnel Dryers
- 7.1.4 Spray for Drum Drying
- 7.1.5 Drying Fluidized Bed Dryers
- 7.1.6 Freeze Drying
- 7.1.7 Vacuum Drying
- 7.1.8 Drying Rates
- 7.1.9 Drying Parameters
- 7.1.10 Osmodehydration
- 7.1.11 Refractance Window Drying

#### 7.2 PROCESS OF MAKING TABLETS

##### 7.3S eparating the flyers

Remove every single leaflet from the leaf petiole. If the leaves have not been removed off the main branch prior to shipping, this can be done directly from the branches. Diseased and damaged leaves are now thrown away.



Figure 3: Catharanthus roseus Tablets

#### 7.4 Cleaning

To remove filth, clean, potable water should be used to wash leaflets in troughs. To get rid of microorganisms, wash leaves once more for 3-5 minutes in 1 percentage saline solution. Last but not least, rinse thoroughly. The time has come for leaves to be dried. New leaves must always be washed with fresh water, so drain each trough after each wash.

#### 7.5 Drenching

Leaflets should be spread out on trays made of food-grade mesh and allowed to drain for 15 minutes before being placed in the dryer. Perforated buckets should be used to strain the water from the leaves.

- 1) Directly removing leaves from branches
- 2) Eliminating flyers from the workshop 3) Cleaning the workshop's leaves

#### 7.6 Blanching Method

Temperature variables (75 °C, 85 °C, and 95 °C) and time variables (five minutes, seven minutes, and ten minutes) are the first and second factors in this study's randomised full block design. Three times are given for each therapy. Based on preliminary study to establish the temperature and length of the blanching procedure, the temperature treatment was selected. The first stage of this research involves employing a blanching method to reduce the saponin content of C.roseus leaves. 200 grammes of prepared C roseus leaves were blanched in 600 ml of water at the proper temperature and timing for the treatment. The blanching procedure is carried out at a temperature less than 100 ° C for fewer than 10 minutes to prevent an excessive loss of nutritional value. Additionally, the process of putting C roseus leaves in boiling water is carried out precisely at the temperature treatment point to reduce contact between the C roseus leaves and the boiling water. It is drained for 5 minutes following the blanching process. Afterward, blanched C.roseus leaves were dried for 2-4 hours in a vacuum cabinet dryer at a temperature of 60 to 70 ° C. the protein, vitamin C, vitamin A, and saponins content were next examined.

#### 7.7 Cooling techniques

The laboratory will receive samples, which will be kept in a freezer at -70 ° C. To keep the C.roseus leaves fresher longer, you can also wrap it in a towel or piece of paper before storing it in the refrigerator. Anytime the temperature is between 28 and 32 ° F, it is considered to be a light freeze, and below 28 ° F, it is considered to be a severe freeze. The leaves will remain fresh for at least 10 to 14 days in this manner.

#### 7.8 Drying Method

The three main techniques for drying C.roseus leaves are as follows.

## Room drying

In a well-ventilated room, distribute the leaflets thinly on mesh racks tied with string (mosquito net mesh can be used). This space ought to be dust, rodent, and insect-free. Using floor and ceiling level vents that are covered with a clean filter to keep the sun and dust out will increase air circulation. It is feasible to use a fan, but it must not be pointed directly at the leaves, as this can enhance airborne microbial contamination. To improve consistent drying, it is advised to turn the leaves over at least once while wearing sterile gloves. Within a maximum of four days, leaves should be entirely dry. There shouldn't be a loading density more than 1 kg/m<sup>2</sup>. However, even with the maximum suggested moisture level of 10 percentage, room-dried leaves cannot be guaranteed to be mold-free. As a result, we do not suggest using this strategy.

## Solar drying

The solar dryer shown in the photographs is advised, but the polyethylene used should be UV treated or opaque (if the plastic is black, beware of temperature increases and ensure it does not go above 55 °C). Dust should be kept out of the air intake by filtering it. A filter can be made out of organza or muslin material. Over a particularly sunny day, the temperature ranges from 35 °C to 55 °C when you spread the leaves thinly on mesh to dry for around 4 hours. The end item ought to be extremely fragile. For both small-scale and large-scale processing, we advise using solar drying, particularly in places like rural areas without electricity. No more than 2 kg/m<sup>2</sup> of load should be applied.

## Drying technology (or) Mechanical drying

Use the hot-air dryers (shown) that are electric or gas-powered. Between 50 °C and 55 °C should be the drying temperature range. The leaves will "burn" and turn brown if the temperature is higher than 55 °C. Drying leaves is recommended till their moisture content is less than 10 percentage. For large-scale leaf processing, we advise using this technique because it guarantees year-round production. The maximum loading density should be 2.5 kg/m<sup>2</sup>.

### 7.9 Milling Machine

A hammer mill made of stainless steel is used to dry the leaves. Leaves can be ground in a kitchen blender or crushed in a mortar for domestic or personal usage. Small-scale processors can routinely mill their products using a burr mill or by renting a commercial hammer mill.

### 7.10 Sieving

The leaf powder may need to be sieved. The size of the screen that is utilised in a hammer mill will determine how fine the finished product is. If the material is excessively coarse, sift it through a sifter with the desired screen size. The following are the recommended particle sizes:

- Coarse (1.0 mm – 1.5 mm);
- Fine (0.5 mm – 1.0 mm); and
- Very Fine ( 0.2 mm – 0.5 mm )



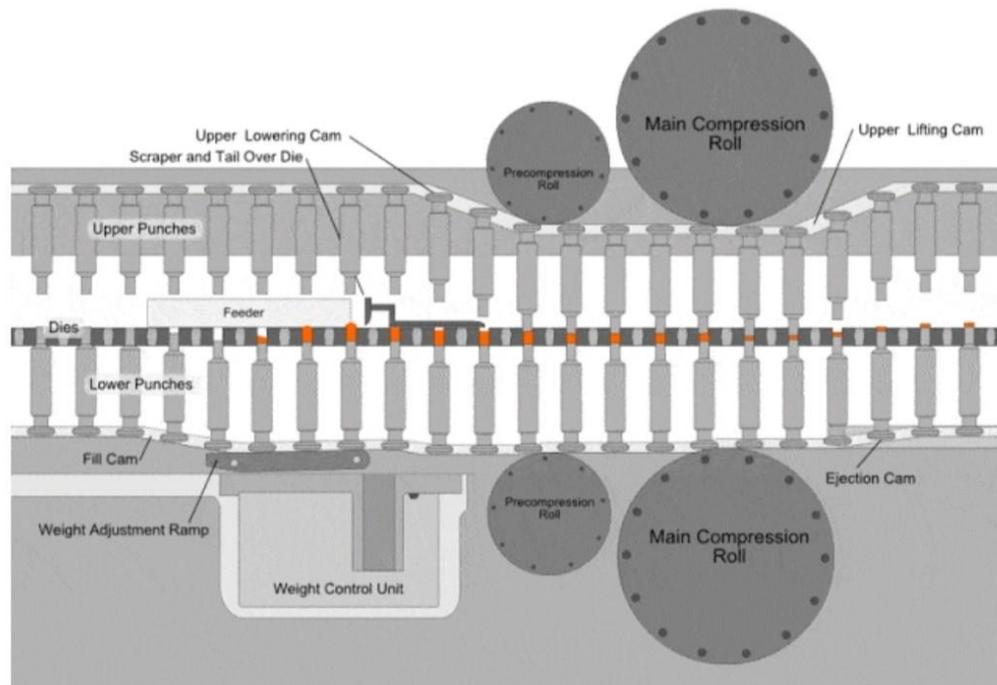


Figure 4: Different Stages of Tablet's Compression Process

### 7.11 The leaf powder is dried

Strong moisture attraction can be found in *C. roseus* leaf powder, which can also reabsorb moisture during or after milling. To significantly lower the moisture content below 7.5 percentage, *C. roseus* leaf powder should be dried at 50 ° C for 30 minutes.

Since *C. roseus* leaf powder strongly attracts moisture, mould contamination is a common occurrence. Additionally, bacteria can more easily penetrate powder that has been finely ground.

### 7.12 Preparation of C.Roseus

Granules are pressed in a die with a bottom and upper punch to create a tablet in a compression machine. The upper and lower punches of two dies work together to press the material into tablets. Due to several improvements made to tablet compression machines, it is now possible to generate more than 500,000 tablets every hour.

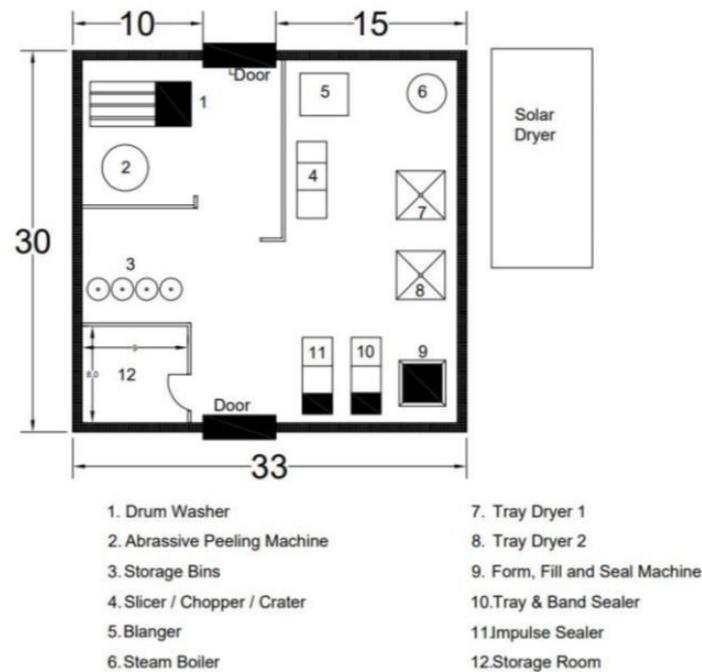
The compression process for tablets is broken down into four distinct stages. Filling, measuring, compressing, and ejection are among these stages.

#### stage of compressing tablets

At the compression station, the filling formulation is overfilled because the metering for overfill has been eliminated. The die's punches exert pressure to compress the tablet, and the die's ejection mechanism ejects the compressed tablet.

### 7.13 Bulk packaging

To prevent re-humidification of the product, the temperature and humidity in the packaging room must be regulated. The powder is dried, allowed to cool, then packaged in clean, single-use polythene bags. This is heat-sealed inside of a second polythene bag. Prior to continued usage, this is done to retain freshness and dryness. The bags should be kept in a dry, cool environment.



All Dimensions are in Feet

Figure 5: Plant Layout

#### 7.14 Complete packaging

To prevent re-humidification of the product, the temperature and humidity in the packaging room must be regulated. Products created from *C.roseus* leaves should be stored in clean, dry, and opaque containers made of materials that won't degrade the product's quality. To stop moisture absorption and content loss, each package must be correctly sealed.

#### 7.15 Personal grooming

Every employee participating in the packaging of *C.roseus* leaf products is required to maintain their personal hygiene and sanitation while performing their job duties. It is mandatory to wear personal protection equipment (PPE) at all times, including head coverings, disposable gloves, and nasal masks.

#### 7.16 Labelling

The following details need to be clearly marked on each packaging of *C.roseus* leaf products:

- The name of the product;
- The net content;
- The producer's name and address;
- The country of origin;
- The lot or batch identification number or code;
- The directions for usage;
- The production date; and
- The nutritional facts ( optional )

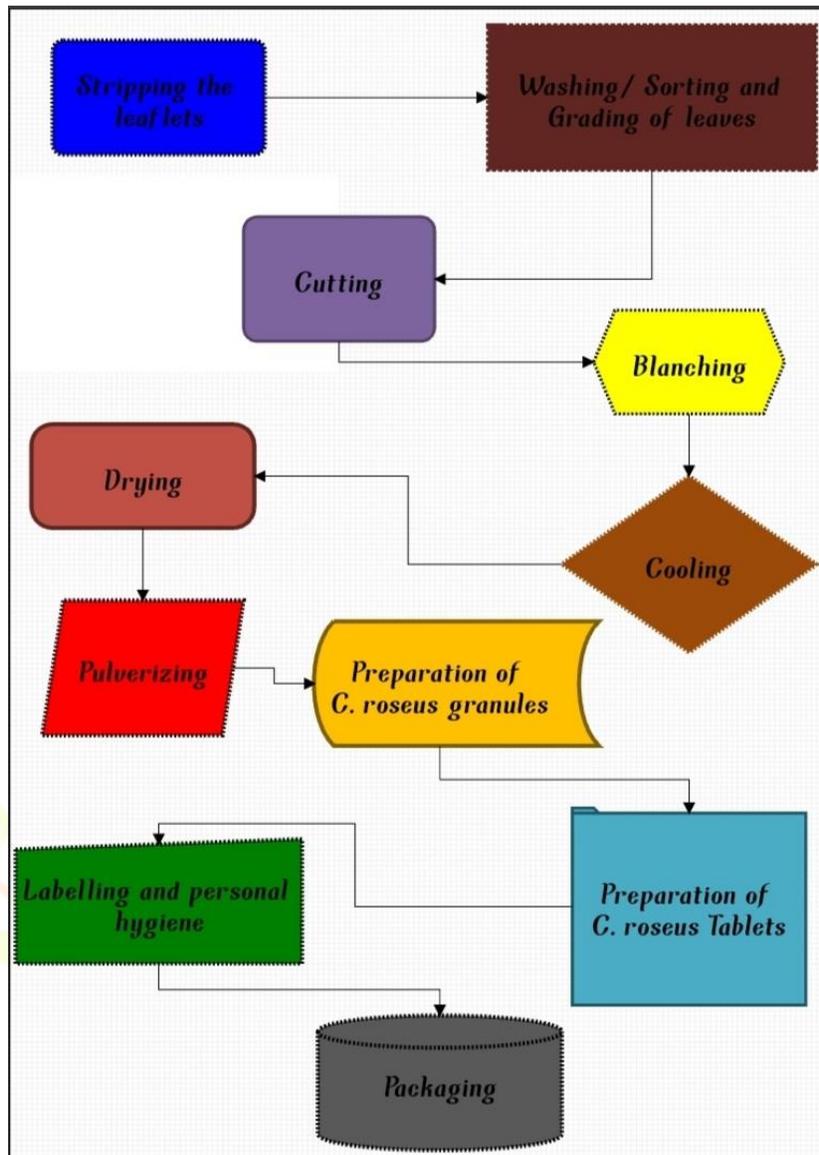
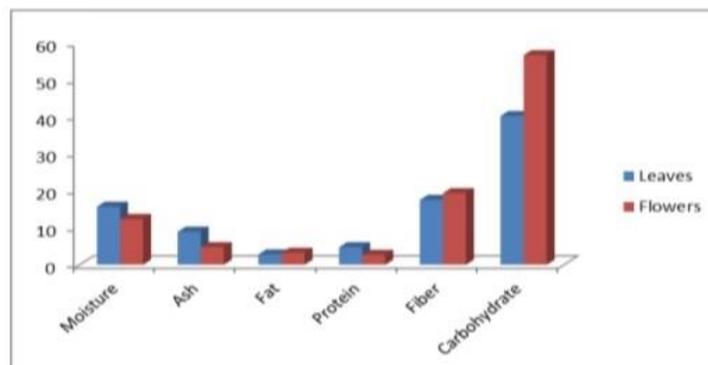


Figure 6: Flowchart

Table 1: Proximate Analysis of *Catharanthus roseus* Leaves and Flower (%).

| S. No | Nutrients    | Leaves      | Flowers     |
|-------|--------------|-------------|-------------|
| 1.    | Moisture     | 15.72 ± 1.1 | 12.35 ± 1.3 |
| 2.    | Ash          | 8.94 ± 0.6  | 4.76 ± 0.2  |
| 3.    | Fat          | 2.80 ± 1.1  | 3.21 ± 1.2  |
| 4.    | Protein      | 4.74 ± 0.3  | 2.67 ± 0.2  |
| 5.    | Fiber        | 17.55 ± 0.6 | 19.34 ± 0.1 |
| 6.    | Carbohydrate | 40.25 ± 2.5 | 56.71 ± 1.6 |



## 8 NUTRITION COMPOUNDS

The leaves and flowers of *C. roseus* were examined for a total of 13 significant elements. Na, K, Ca, Mg, Cr, Fe, Zn, Al, Cu, Ni, Pb, Cd, and Mn were found in both the leaves and the flowers, according to the results.

The study's most significant discovery was that *C. roseus* flowers had higher concentrations of K and Zn than did the leaves, which had higher concentrations of all other elements.

### 8.1 mineral Content

Using an atomic absorption spectrophotometer, the mineral content of *Catharanthus roseus* leaves and flowers was ascertained.

Six different minerals, including calcium (Ca), sodium (Na), and potassium (K). Magnesium (Mg), Iron (Fe), and Zinc (Zn) were examined in the plant's leaves and blooms, which were used to treat a number of ailments. Table 2 displays the findings of the mineral analysis. Each outcome was the average of at least three different measurements.

These components played an active part in the synthesis of secondary metabolites, which were responsible for the pharmacological effects of these minerals in the plant's leaves and flowers.

The current investigation found that sodium (Na) and calcium (Ca) concentrations were greater than expected. *Catharanthus roseus* leaves contain more iron and magnesium than the blooms do. Flowers, on the other hand, contained higher amounts of potassium (K) and zinc (Zn).

The osmotic equilibrium between extracellular fluid and tissue cells is maintained by sodium (Na), which aids in keeping the pH of blood within a normal range.

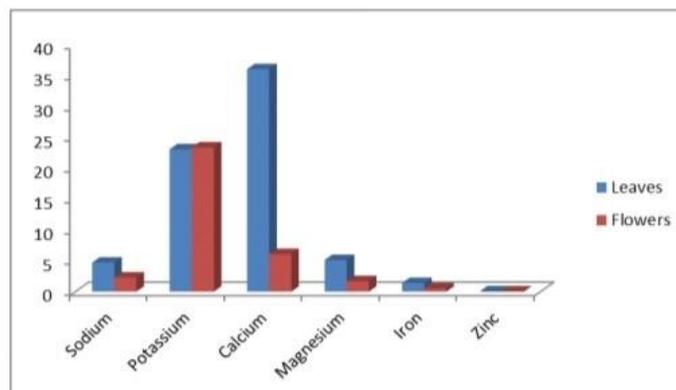
Additionally, it concentrates on controlling heart muscle conduction, muscle contraction, and nerve impulse conduction. For leaves, the average sodium (Na) concentration was  $4.72 \pm 0.5$ , and for flowers, it was  $2.31 \pm 0.3$ .

#### 8.1.1 Mineral components

- a) Sodium
- b) Potassium
- c) Calcium
- d) Magnesium

**Table. 2: Mineral Analysis of *Catharanthus roseus* Leaves and Flower.**

| S. No | Minerals  | Leaves          | Flowers         |
|-------|-----------|-----------------|-----------------|
| 1.    | Sodium    | $4.72 \pm 0.5$  | $2.3 \pm 0.3$   |
| 2.    | Potassium | $23.1 \pm 5.0$  | $23.4 \pm 5.1$  |
| 3.    | Calcium   | $36.1 \pm 3.0$  | $6.1 \pm 5.1$   |
| 4.    | Magnesium | $5.13 \pm 0.3$  | $1.7 \pm 0.1$   |
| 5.    | Iron      | $1.4 \pm 0.1$   | $0.55 \pm 0.1$  |
| 6.    | Zinc      | $0.023 \pm 0.1$ | $0.048 \pm 0.1$ |



**Fig. 2: Mineral Analysis of *Catharanthus roseus* Leaves and Flower.**

## 9 CAPSULES MADE FROM C. ROSEUS LEAVES

Same process of Catharanthus roseus capsule. The best layout for branded packaging solutions is on our flexible production floor. Our packaging lines give us the speed and flexibility to bottle a variety of package arrangements for liquids, pills, powders, and capsules. Our customers can choose from a wider range of package options thanks to our packet filling capabilities. In order to increase sales and differentiate our clients from the competition, our qualified in-house packaging specialists collaborate with our Quality and Regulatory team



Figure 7: C.roseus leaves Capsule



## Application:

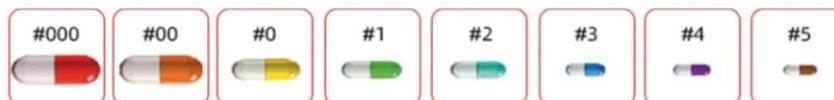


Figure 8: capsule machine

## HARVESTING AND FABRICATION

Natural herbal powders are guaranteed since all herbs are 100 percentage naturally picked, dried, and ground without the use of chemicals.

### 10 Advantages for tablets

Benefits of Supplements Delivered in Tablet Form Many companies opt to distribute their supplements in tablet form because: Scoring tablets enables precise dosage division. Different sizes, shapes, and colours make it easy to distinguish tablets from one another. Tablets can be coated to delay absorption until it is most beneficial. Tablets are a practical and affordable supplement choice.

### 11 Benefits of *C. roseus* leaf tablets for health

The best natural, organic energy and endurance superfood is catharanthus roseus tablets. The ingredients of catharanthus roseus tablets are pure catharanthus roseus leaf powder. Since the leaves of *Catharanthus roseus* are the component of the plant that contains the most nutrients, using 100 percentage pure leaf powder in tablets will ensure that consumers receive the greatest benefit. Each tablet contains 500 mg of pure powdered catharanthus roseus. Enhances stamina management Antioxidant for diabetes Reduces Cholesterol Limits Muscle Growth oleifera Blood Pressure Reduction of Tiredness.

### 12 APPLICATION

Dietary Supplements  
Pharmaceuticals  
Cosmetic  
Personal Care  
Food

### 13 CONCLUSION

Numerous studies have demonstrated the extensive variety of medicinal and therapeutic characteristics that *catharanthus roseus* possesses. The pape, for instance, believes that the general ingestion contents of the *C.roseus* possess various distinct anti-diabetic, anti-tumor, antioxidant, anti-mutagenic, and antibacterial properties of this substance are well established. Studies into the *catharanthus roseus* plant's ingredients and mode of action have the potential to greatly advance the development of pharmaceuticals. The chemical constants of *Catharanthus roseus* have been extensively studied and documented, thus the taster investigations should focus on the isolates' likely method of action and any potential structural-activity relationships. Finally, *C.roseus* has many uses in the medical field.

### Acknowledgements

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