

## Formulation and Evaluation of the New Combination of Vitamins (Vitamin P+Vitamin C) Capsule is to Enhance Antioxidant Property

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### Abstract

The goal of this project is to create a new dietary supplement capsule that combines Vitamin P (flavonoids) and Vitamin C to boost antioxidant activity. By bringing together these two powerful vitamins, we aim to create a synergistic effect that enhances their individual antioxidant properties, providing a more effective way to protect against cell damage and oxidative stress. This project seeks to develop a novel capsule combining Vitamin P and Vitamin C to amplify antioxidant activity and provide enhanced protection against oxidative stress and cell damage

**Keywords:** Vitamin P, Vitamin c, Capsule, antioxidant property, Formulation

### Introduction:

Introducing, a ground breaking supplement that harnesses the combined antioxidant strength of Vitamin P (flavonoids) and Vitamin C. This innovative blend unlocks enhanced benefits, providing robust protection against oxidative stress and cell damage. Unleashes a potent fusion of flavonoids and ascorbic acid to neutralize free radicals and shield cells. Combines the complementary effects of Vitamins P and C to bolster immune function and overall wellness. Optimized formula ensures maximum bioavailability and utilization of both vitamins.1-2.

### Materials and method:

Vitamin P, Vitamin C, MCC, Talc, and Starch were procured from loba chemie and of analytical grade.

### Formulation of capsule

The weighing of the powder is a crucial step in the formulation process, including the API and excipients.

- Vitamin P(40%): 15000mg.
- Vitamin C: 12000mg

- MCC(Microcrystalline cellulose): 9000mg
- Talc: 6000mg
- Starch: 840mg.

### Mixing:

Mix vitamin P and vitamin C and MCC to thoroughly ensure that the API and excipient are well combined.

### Preparation of Binding Solution:

Heat a small amount of water and prepare a binding solution. Gradually add this solution to 840 mg of starch until it becomes viscous. Allow the viscous starch paste to cool.

### Wet Granulation:

Add the dry ingredients (vitamin P, vitamin C, MCC mixture) to the wet starch paste. Mix thoroughly and pass the mixture through a No. 30 sieve to form granules.

### Drying:

Dry the granules in a hot air oven set to 60°C until completely dry. Additionally, adjust the drying temperature and duration as needed.

### Sieving:

To achieve uniform and consistent-sized dried granules, sieve them through a No.30 sieve.

#### **Lubrication:**

Add talc to the granules and mix thoroughly.

#### **Filling the Capsules:**

Fill each capsule with 350mg of granules (powder)<sup>3</sup>.

#### **Evaluation of capsules**

##### **Weight Variation**

Average Weight of capsule.

- Check the cleanliness of the balance
- Collect Sample of 20capsule.
- Weigh the capsules, and record the weight in BMR.
- Calculate the average weight of the capsule.
- Calculate the mean (average weight of capsules) of an average weight of each in the Process check,

##### Checking Individual Weight Variation

- Collect a sample of 20 capsule.
- Weigh the capsules, and record the weight in BMR
- Calculate the average weight of the capsule.
- Weigh 20 individual capsules one by one and record the observations in the BMR individually.
- Check the lower weight and upper weight for determination of lower and upper percentage deviation.

Upper % deviation= (Average weight of 20 capsule - Upper weight) x100/Average weight of 20 capsules  
Lower % deviation= (Average weight of 20capsules -Lower weight) x 100/Average weight of 20 capsules

After checking the initial paramcters, if it is with in the limit, the compression machine.

#### **Dissolution test**

##### **Procedure:**

Ensure that the instrument is clean & free from dust.

Switch on the power switch & heater switch provided on there ar right hand side

When the power is switched on the following things are displayed.

Then the system gives the long beep.

Set the corresponding sampling time interval & rpm. The bath LED is illuminated & Check the

temp.

List the stirrer unit using up key on the front panel.

Put the jars, filled with the medium in the tank.

Fix paddle (screw) on the spindle carefully and tightenit to using the key provided.

Bring the stirrer unit down using DOWN key.

Set all the parameters RPM and temperature as directed for the test.

Start the stirrer by using the START/STOP key.

Once the set temperature is reached to READ OR LED on& leave the capsule in the test jars or baskets as desired.

Start the test using START or STOP or TEST key.

Carry out the analytical procedure as per the specification & calculates the results.

Switch off the instrument after the use.

#### **UV Spectroscopy**

- Switch on the main power of UV spectrophotometer
  - Switch on the instrument.
  - Allow stabilizing for 15min.
  - Set the desired wavelength with the knob in increasing order.
  - Keep the sensitivity switch at the highest position.
  - Put themo deselect or at %T position.
  - Set the filter wheel as per the wavelength.
  - Adjust zero percent transmittance with the help of set zero control.
  - Rinsereferencecuvetteandsamplecuvettewith blanksolution2to3times.
  - Adjust 100% T with the help of % knob.
  - Remove the cuvette and drain out the blank solution from it. Rinse it with sample 2-3 times and filled with sample.
  - Clean the outer surface of the reference cuvette with tissue paper.
  - Place the cuvette into the sample holder and cover the cuvette compartment.
  - The reading shown in the data position is the absorbance or %T of the sample.
- #### **Disintigration test:**
- Ensure that the instrument is clean and free from dust.
  - Ensure that all the switches and knobsare off and in normal position.

- Switch on the main switch and then put ON/OFF switch at the rare panel to ON position
- Suspended the basket rack assembly in the 1000ml beaker containing the specified liquid medium.
- Switch on the heater-thermostat & adjust the temperature of the liquid bath at 37+/-20+c
- Now add the no. of samples (tablets/capsules) as specified in the monograph, in the cylindrical holes provided in the basket/rack assembly.
- Close with disc where applicable & specified in the monograph,
- Start the oscillation by putting its switch at on position
- The oscillations can be set as required with the help of thermostatic control knob & switch off the apparatus after the use.

**Results:**  
**Evaluation of capsule**  
**Weight Variation:**

**Average weight=450mg±5%(427mg –472mg)**

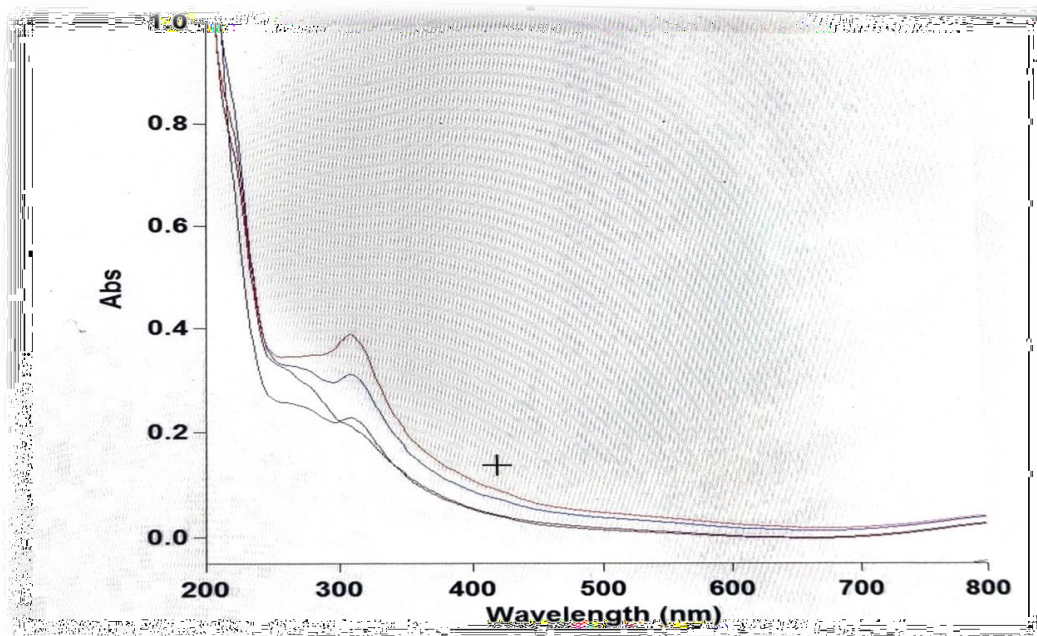
Formulation	Individualweight 450mg ± 5% (427mg–472mg)
F-1	440mg
F-2	460mg
F-3	460mg
F-4	460mg
F-5	460mg
F-6	440mg
F-7	450mg
F-8	430mg
F-9	430mg
F-10	460mg
F-11	470mg
F-12	460mg
F-13	430mg
F-14	440mg
F-15	440mg
F-16	460mg
F-17	440mg
F-18	460mg
F-19	450mg
F=20	460mg

**Disintegration test**

BATCH NO	Disintegration time
BATCH1	19min.36sec
BATCH2	19min.10sec
BATCH3	18min.57sec

**Average disintegration time=19min.23sec.**

**UV spectroscopy**



In the present work, the capsule dosage form has been formulated successfully containing Vit C and Vit P as an active ingredient. The wet granulation method has been used for preparing the granules for filling in the capsules. The hard gelatin capsule has been used. Both API (vitamin C & vitamin P) are water soluble vitamins therefore they are compatible to be formulated together. It is found that both vitamins together can give enhanced therapeutic benefit. this formulation has been prepared as health supplements which has many benefits such as antioxidant, anti-inflammatory, immunity booster, etc.

By performing the evaluation parameters such as weight variation it has found that all the capsules are within the range limit. By performing disintegration it was found that hard gelatin capsules were disintegrated within the range of 18 to 20 minutes. Single capsules contain 350mg of granules according to the formulation<sup>4</sup>.

Over the year vitamin c is mostly used vitamin in a regular diet. vitamin c is the naturally occurring water soluble vitamin .

70-90mg is the daily requirement of vitamin c in the humans and 50-60mg is the daily requirement of vitamin p in humans

**Each capsule contains:**

**Vit p (40%): 125 mg**

**Vit c: 100mg**

**Mcc: 75 mg**

**Talc: 50 mg**

**References:**

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