# PREPARATION OF ANTIVIRAL FACE MASK USING LEMON BALM EXTRACT

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**ABSTRACT:** In this review paper we are handling with medical textiles to produce a innovative product for an effective use. Going to develop a antiviral face mask by using lemon balm extract, to retain the antiviral activity of the lemon balm in the face mask to resist the spread of viral diseases. The herb lemon balm or bee balm is dried and extracted by using the solvent methanol. And going to fuse the extract with organic cotton by using padding mangle. And going to be tested for FTIR and GC-MS method to confirm the presence of bioactive components.

**KEY WORDS:** Lemon balm, bee balm, lamiaceae, melissa officinalis.

## 1.) INTRODUCTION:

Lemon balm or bee balm is also known as melissa officinalis found in European countries. And now its being cultivated in temperate and subtropical regions. Its have been used in various forms like capsules, ointments, antispasmodics, sedative and tonics and also in the treatment of gastro intestinal disorders. Not only for these medical usages and also it plays a vital role in antioxidant, antibacterial and antiviral activities. The presence of rosmaric acid is the main responsibility for the antiviral ac tivity of the lemon balm. And the cultivation is a

easy process and its economically cost efficient. It grows rapidly and spread all over the space it will be confused and looks like a weed. Lemon balm is used in topical antiviral diseases like oral herpes In Europe. And in Germany the essential oils are used for stress relief.

## 2.) SOURCE MATERIALS FOR A FACE MASK:

### 2.1. LEMON BALM :

Lemon balm or bee balm also known as melissa officinalis found in Europe. And commonly cultivated in temperate and subtropical regions. The cultivation is easy process and cost efficient.

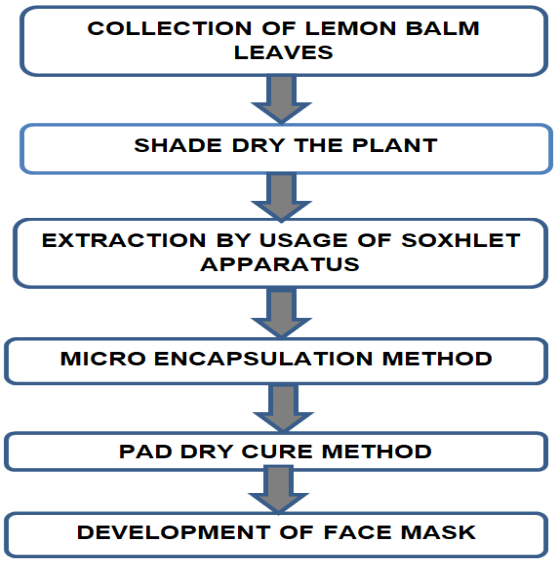
#### 2.1.1. CHEMICAL COMPOUNDS:

The chemical compounds are flavonoids, monoterpenoid aldehyde, tannins, triterpenes, polyphenolic compounds, sesquiterpenes and essential oils. Polyphenolic compounds like caffeic acids and rosmarinic acid is responsible for the antiviral activity.

### 2.2. INTERLOCK TYPE OF ORGANIC COTTON FABRIC:

Organic cotton is a type of cotton cultivated without use of pesticides. As a result the fabric is free from toxic substances. Face mask is a wear which is close to the respiratory organ so it need to be free from the toxic substances, so we decided to use organic cotton for the development of face mask. In this the interlock type of knitted fabric is used mainly because of the easy absorbancy of the extract. And this type of material is extremely soft in nature. And it can be easily stretched , not only easy streachability it also has a good recovery property. It can recover to its orginal position at the time relaxation.

## 3. FLOW PROCESS FOR THE DEVELOPMENT OF ANTIVIRAL FACE MASK :



**4. EXTRACTION METHOD :**

**4.1.TYPES OF EXTRACTION METHODS :**

There are several methods to extract a natural material from its raw material.

| METHOD | SOLVENT | TIME | SOLVENT CONSUMED |
|---|---|---|---|
| Maceration | Aqueous, non-aqueous solvents and water | Long | Large |
| Percolation | Aqueous, non-aqueous solvents and water | Long | Large |
| Decoction | Water | Modera te | None |
| Reflux extraction | Aqueous, non-aqueous solvents and water | Modera te | Moderate |
| Soxhlet extraction | Organic solvents | Long | Moderate |
| Pressurized liquid extraction | Aqueous, non-aqueous solvents and water | Short | Small |
| Supercritical liquid extraction | Supercritical fluid | Short | None or small |
| Ultrasound assisted extraction | Aqueous, non-aqueous solvents and water | Short | Moderate |
| Microwave assisted extraction | Aqueous, non-aqueous solvents and water | Short | None or moderate |
| Pulse electric field extraction | Aqueous, non-aqueous solvents and water | Short | Moderate |
| Enzyme assisted extraction | Aqueous, non-aqueous solvents and water | Modera te | Moderate |
| Hydro distillation and steam distillation | Water | Long | None |

**4.2. SOXHLET APPARATUS:**

From the above extraction process we are going with Soxhlet apparatus because of easy extraction process. It is a continuous process with high efficiency in a low period of time.

**4.2.1.PROCEDURE:**

- We need to place the sample material (lemon balm) and to place in the thimble.
- Place the thimble into the main chamber of the Soxhlet extractor
- And add methanol in the round bottom flask and to make heat.
- Place the Soxhlet apparatus in the bottom round flask.
- The cold water should enter by bottom and to exit through the top so that attach the reflux condenser above the extractor.
- Now the apparatus is ready for the further process so leave the apparatus for some time for the complete extraction process.

**5. MICROENCAPSULATION METHOD:**

This is a method by which the compounds of the raw materials are released and form as like a wall to produce a capsule like structure. In this lemon balm as a core material and gum acacia as a wall material. In 100ml of hot water 10grams of wall material is allowed to swell for half an hour. And to this 50ml of hot water is added then it to stirred for a period of 15mins and maintaining the temperature 40-50 degree Celsius. After this 10ml of raw material is added and need to be stirred at a rpm of 300-500 for a period of 15min and then 20 % sodium sulphate for 10-15min. Now the stirrer speed is reduced then 5ml of 17%glycerol was added. At last the stirrer gets stopped and the mixture gets freeze now the microcapsules are formed.

**6. PADDING MANGLE:**

The extracted solution is applied on the fabric by using padding mangle. In order to get equalized appearance on the fabric.

- ✓ Padding is done at padding mangle at the temperature of 30 degree C.
- ✓ Drying of padded fabric is done at oven at the temp of 60 degree C for 10 mins.
- ✓ Curing is done at curing chamber at the temperature of 120 degree C.

**7. CONCLUSION:**

We conclude in this article that we can develop the antiviral face mask by use of lemon balm extract by the above mentioned ways. And also we can able to prove the antiviral activity of the developed face mask by taking the material to antiviral test.

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