

# A Study on Effect of Medicinal Properties Extract From *Ocimum Basilicum* on Cotton Fabric

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**ABSTRACT** - In this study, cotton fabric is dyed with extract of *ocimumbasilicum* (sweet basil) leaves, that dyed cotton fabric is tested for antibacterial activity and phytochemical analysis. Antibacterial activity is done by diffusion method. *Streptococcus* sp, *Staphylococcus* sp, *Klebsiellasp*, *Bacillus* sp, *Pseudomonas* sp is analyzed in this activity. This analysis shows maximum activity in *klebsiella* sp. (6.3mm) and minimum activity in *pseudomonas* sp. (3.5mm). Dyed cotton fabric shows good antibacterial activity in this analysis. Some phytochemicals present this dyed fabric.

**Key Words:***ocimumbasilicum, cotton fabric, Antibacterial activity*

## I. INTRODUCTION

Basil is an herb. The parts of the plants that grow above the ground are used to make medicine. It sometimes referred to as “the king of herbs” and may have been derived from the Greek *basillus* (or) king. The basil variety *tulsi* (*ocimumtenuiflorum*), previously *ocimum sanctum*, bush basil (*ocimum minimum*). The main use of basil medicinally is a natural inflammatory. Basil is treatment of diabetes, respiratory disorders, allergies, impotence and infertility. Basil contains cinnamic acid, it enhance circulation, stabilize blood sugar and improve breathing in those with respiratory disorders. It is also known that basil is very high in antioxidants, especially when it is used as an extract (or) oil. These antioxidants can protect your body against free radical damage associated with aging, some skin ailments and most forms of cancer.

*Ocimumbasilicum* also known as sweet basil, great basil (or) Saint Joseph’s wort is an aromatic annual herb and an important economic crop. It is called as Royal herb. It’s usually the leaves that are used in herbal medicine, but sometimes all of the aerial parts of the herb are used. It’s preferable to use the herb fresh because it loses much of its flavor when dried. The plant contains 0.2 to 1 percent essential oil, which consists primary of linalool and methyl chavicol, but it also contains small amounts of cineole, methyl cinnamate and other terpenes. Other constituents include tannins, monoterpenes, sesquiterpenes and phenylpropanoids. The herb was still is used extensively in ayurvedic medicine for its antiseptic properties.

*Ocimumbasilicum* has antispasmodic, antiseptic, expectorant, and antibacterial properties and it can be used for epilepsy, migraine, and fever associated with colds and flu. Additionally, the herb has a slight diuretic effect and has sometimes been used to treat arthritis, rheumatism and urinary problems. The fresh leaves have been used as an insect repellent and the juice extracted from the leaves is

used to treat snake bites and insect stings. The leaves have been used to remove warts and other skin blemishes.

Cotton fabric is natural and cellulosic fabric. It has worldwide popularity for its variety of use. Cotton fiber is the most used fibers for producing various types of fabric through all over the world. Due to many features, cotton even though it was discovered later than other fibers gained a superior position and stimulated immense development of textile industry. Cotton fabric has physical properties of tensile strength, elongation at break, elastic recovery, specific gravity, moisture regain, effect of sunlight, effect of heat, effect of age and chemical properties are effect of acids, effect of alkalis, effect of organic solvent, effect of insects, effect of microorganisms.

It has very good breathable characteristics, it is hypoallergenic, agreeable to touch, it is suits perfectly for people with skin hyper sensibility. It has low thermal-conductivity. In summer it prevents the skin from heat, and in winter it preserves the warmth of the body. Cotton fabrics are easy to dye. Cotton fabrics have very low elasticity characteristics, so they almost don’t stretch. It often used with water resistance, oil proof, flame retardant finishes. It often finds its producing work wear with high hygienic requirements and clothing for protection against low temperatures.

### OBJECTIVES:

- To determine the effect medicinal property of *ocimumbasilicum* by applying the extract on the cotton fabric.
- To study whether the cotton fabric dyed in the extract of *ocimumbasilicum* cures skin diseases while it is worn.
- To study whether it will be better remedy to the skin diseases.
- To experiment whether it won’t produce any side effects like any other allopathic medicine.

- To check the effect of microorganism of cotton after treating with leaves of *ocimumbasilicum*.

## II. REVIEW OF LITERATURE

In an article their study was to verify the registered benefits of leaves of *ocimumbasilicum* and to determine its antimicrobial activity against the test microorganisms. They used bacterial test strains are *Escherichia coli* (21 strains), *Pseudomonas aeruginosa* (12 strains), *proteus mirabilis* (21 strains), *klebsiella pneumonia* (21 strains), *staphylococcus aureus* (17 strains) and *enterococcus faecalis* (8 strains). They are conducting antimicrobial sensitivity testing by agar disc diffusion method. Their results indicated that extracts of *ocimumbasilicum* exhibited higher antimicrobial activity against the tested gram positive microorganisms. [Ref. Antibacterial activity of *ocimumbasilicum* (Rehan) leaf extract against bacterial pathogens in Sudan by Zahra.A.Adam].

**According to the article of S.Sanni**, the dried leaves of *ocimumbasilicum* contain 0.20-1% essential oils. Their study was therefore carried out to identify the chemical and elemental constituents of *ocimumbasilicum* leave as basis for validation of its pharmacological activities. They used disc diffusion method to determine the antibacterial activity of the aqueous leaf extract of *O.basilicum*. Their result of the phytochemical analysis of the aqueous leaf extract of *O.basilicum* showed that saponin and alkaloids are the most abundant compounds present in the extract while flavonoids, cardiac glycosides, terpenes and steroids were present in medium quantity and tannins and carbohydrates occurred in minute quantities..[Ref. phytochemical analysis, elemental determination and some vitro antibacterial activity of *ocimumbasilicum* L. leaf extracts]

**In an article by Dinanath D patil, ethanol, methanol and hexane extract from *ocimumbasilicum* labiatae** (sweet basil) were investigated for their in vitro antimicrobial properties. They used a disk diffusion and minimal inhibition concentration method. The hexane extract showed a stronger and broader spectrum of antibacterial activity. Antimicrobial activities are done for all the five pet ether, chloroform, acetone and methanol and aqueous extracts. In that methanolic extracts showed maximum zone of inhibition against almost all organisms in cup plate method. [Ref. antibacterial and antioxidant study of *ocimumbasilicum* labiatae (sweet basil)].

**According to the article of R.Carolinejeba and G.Rameshkumar**, flower of *ocimumbasilicum* possess stimulant, carminative, antispasmodic, diuretic, demulcent effects. Juice of the plant has antibacterial effect. In their studies, antimicrobial effect of *ocimumbasilicum* was determined against *salmonella typhimurium*, *staphylococcus aureus* and *Escherichia coli*. The species were found to possess equipotent zone of inhibition against

the selected pathogens. [Ref. Antimicrobial Activity of *ocimum* species].

In an article, the author says, the preservative effect of many plant species and herbs suggests the presence of antioxidative and antimicrobial constituents in their tissues. Their purpose of the study was to evaluate Indian basil as a new potential source of natural antioxidant and phenolic compounds. The antimicrobial activity of different essential oils was evaluated by the diffusion method. In their study linalool was identified as the major component present in sweet basil oil. [Ref. Antioxidant and antimicrobial activities of sweet basil oils by H.C.Srivastava].

**According to the article of HadushGebrehiwat**, the medicinal advantages of some plants fall in the presence of some chemical compounds that produce fixed physiological actions in the human body. Some of these biologically active ingredients are tannins, flavonoids, alkaloids and phenolic compounds. The main phenolics reported in basil are phenolic acids and flavonal- glycosides. [Ref. Characterization of some compounds isolated from sweet basil (*ocimumbasilicum*L.) leaves extract]

In an article author says, *ocimumbasilicum* plant is useful in treatment of stomach complaints, fever, cough and gout. It cures kusta (obstinate skin disease including leprosy) and scorpion bite. Author says that chinnasamy et al., too observed somehow, similar results when they investigated the anti-inflammatory activity of crude methanolic extract of *ocimumbasilicum*. In vitro anti oxidant activities of 50% hydroalcoholic extract of *ocimum* species namely *ocimumbasilicum* and *ocimum sanctum* were achieved at varying concentrations using DPPH radical scavenging activity. [Ref. Phytochemical and pharmacological studies on *ocimumbasilicum* Linn. - A review-by Alia Bilal].

## III. METHODOLOGY

Healthy and young leaves of *ocimumbasilicum* were elected. The shaded dried leaves of *ocimumbasilicum* were weighted and ground in a sterile mortar. The leaves of *ocimumbasilicum* were cleaned and dried in shade for 7 days, then ground well to fine powder. About 500 g of dry powder was extracted with methanol (80%) at 70°C by continuous hot percolation using soxhlet apparatus. The extraction was continued for 24 hrs. The methanolic extract was then filtered and kept in hot air oven at 40°C for 24 hrs to evaporate the methanol from it. A dark brown residue was obtained. The residue was kept separately in air tight containers and stored in a deep freezer. Phytochemical analysis of the plant extracts was undertaken using standard qualitative methods as described by various authors (Kapoor et al., 1969; Odebiyi and Sofowora, 1990).

The plant extracts were screened for the presence of biologically active compounds such as alkaloids, flavonoids, carbohydrates, phytosterols, proteins, phenolics, tannins and saponins. Dragendroff's test (Kraut reagent –

Potassium bismuth iodide),Wagner’s reagent (Iodine-Potassium iodide solution), Meyer’s reagent (Potassium mercuric iodide),Flavonoids (Somolenski<sup>et al.</sup>, 1972) were taken for testing the presence of alkaloids and flavonoid. It showed positive result. Then Fehling’s test (Kokate, 1994), Benedict’s test were taken for testing the presence of carbohydrate and it showed carbohydrate presence. By the testing method of Million’s test (Walsh and Farrel, 1961) there was a result that proteins was present. Then presence of phenol was confirmed by (Malick and Singh, 1980),Lead acetate test,Libermann’s tests.Saponins,TanninsPhytosterols,Terpenoids,phlobatannins were tested by various methods and it showed positive results.GC-MS analysis (Ivanova<sup>et al.</sup>, 2002) also taken.

#### IV. TEST HIGHLIGHTS

**Title:** Antimicrobial activity of an organic compound stained sample cloth

**Study:** Antibacterial activity

**Sample:** Cloth sample

**Sample pre-processing:** Direct analysis

**Bacterial cultures:** *Streptococcus* sp. *Staphylococcus* sp. *Klebsiella* sp. *Bacillus* sp. and *Pseudomonas* sp.

**Growth medium:** Nutrient broth for bacterial culture preparation and Muller-Hinton agar for antimicrobial assays.

**Test Concentration:** NA (Cloth material as disc)

**Diluent:** NA (Direct sampling)

**Antimicrobial assays:** Antimicrobial disc susceptibility tests

s.no	Microorganism	Zone of inhibition	
		Control	Sample cloth
1	<i>Streptococcus</i> sp.	–	6mm
2	<i>Staphylococcus</i> sp.	–	5mm
3	<i>Klebsiella</i> sp.	–	6.3mm
4	<i>Bacillus</i> sp.	–	4mm
5	<i>Pseudomonas</i> sp.	–	3.5mm

Table 2 -Qualitative Analysis of phytochemical compounds of leaves of *Ocimum basilicum*

Phytochemical compounds	<i>Ocimum basilicum</i>
Alkaloids	+
Flavonoids	+
Carbohydrates	+
Protein	+
Phenols	-
Saponins	-
Tannins	+
Phytosterols	+
Terpenoids	+
Phlobatannins	-

+ denotes present, - denotes absent

GC-MS analysis of Leaves extract of *Ocimum basilicum*

Table 1- showing the antimicrobial activity of sample cloth against different bacterial species

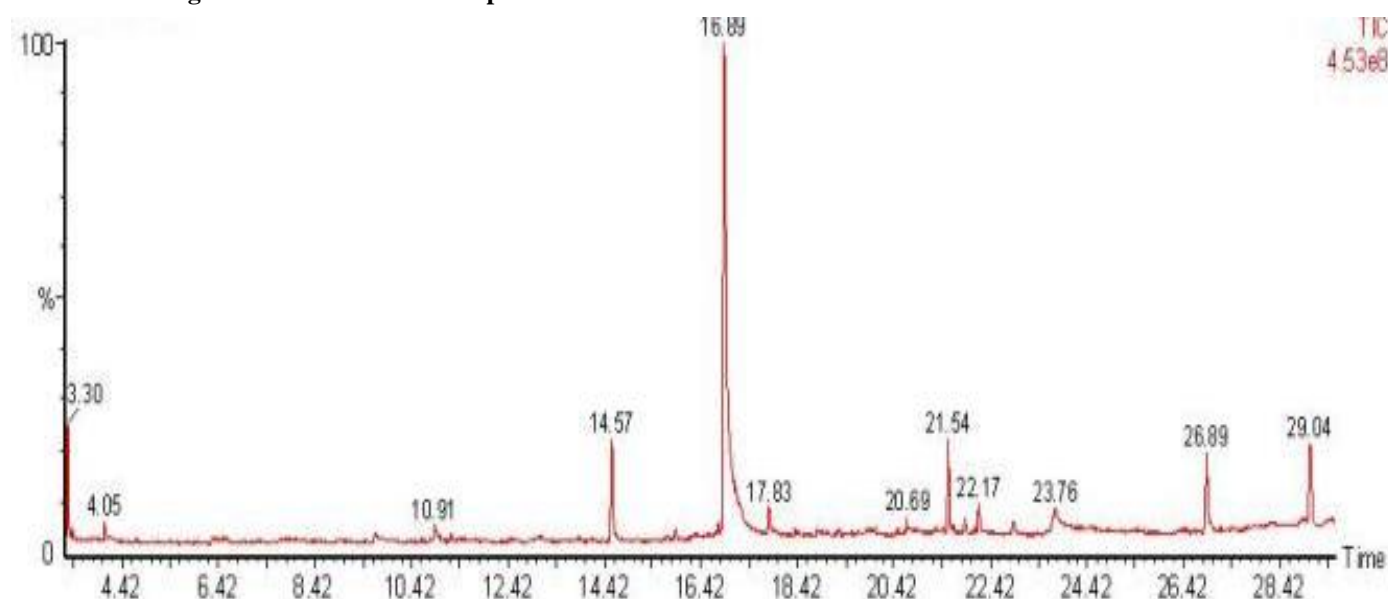




Fig.1: Antimicrobial activity against *Streptococcus* sp.    Fig.2: Antimicrobial activity against *Staphylococcus* sp.    Fig.3: Antimicrobial activity against *Klebsiella* sp

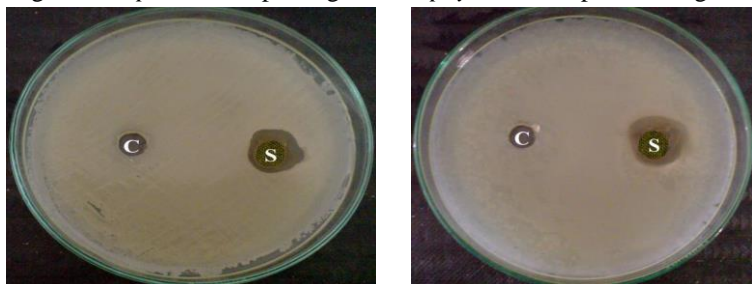


Fig.4: Antimicrobial activity against *Bacillus* sp.    Fig.5: Antimicrobial activity against *Pseudomonas* sp.

## V. CONCLUSION

In this Project I conclude that the cotton fabrics have good dye ability using natural dyes. In this process the phytochemical test prove that the dye powder has better performance. Then this dyed fabric has to be taken to the anti bacterial activity, the result of this process also positive.

So, this project I conclude that the cotton dyed fabric treated with *ocimum basilicum* to be used for skin diseases and allopathic medicine in the form of Mask, Bandage, Plaster etc.,

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