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# Phyto-Extraction of Essential oil used as a Natural Preservative for Cream and Gel

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**Abstract:** *Skin care is the main part of a person's overall appearance. Our daily routine we use cosmetics which most of them are synthetic product. Many herbal product industries use synthetic material as preservatives like methyl paraben, propyl paraben, butyl paraben which are preserve cosmetic product long life. But some of them carcinogenic. The plant is having antibacterial, antifungal, antioxidant, anthelminthic, carminative, aromatic, stimulant, expectorant, anti-inflammatory properties. Many plant extracts, spices, essential oils having property to kill the micro-organism or to stop their growth and preserve cosmetic product long life. In this study main aim is to estimate moisture content and stability at different temperature. Physicochemical test for herbal cosmetics and analysis of Microbial assays. Preservatives are commonly used to prevent microbial growth and spoiling of the cosmetic products. Plant selected for natural preservatives were dose not change in their pH, moisture content, texture, stability of herbal cosmetic products at 15 days of interval.*

**Keywords:** Skin care, Cosmetics, Microbial Assay, natural Preservatives

## I. INTRODUCTION

**Natural skin care** is the care of the skin using naturally-derived ingredients (such as herbs, roots, essential oils and flowers) combined with naturally occurring carrier agent, preservatives, surfactants, humectants and emulsifiers (everything from natural soap to oils to pure water). The classic definition of natural skin care is based on using botanically sourced ingredients currently existing in or formed by nature, without the use of synthetic chemicals, and manufactured in such a way to preserve the integrity of the ingredients. As a result of this definition, many people who use natural skin care products generally make their own products at home from naturally occurring ingredients. Many people use natural skin care recipes to make remedies to care for their skin at home. Many spas and skin care salons now focus on using more naturally-derived skin care products.

The term "Cosmetics" is derived from Greek word ***Kosmin*** meaning to **decorate**. These are the natural or synthetic substances applied to a person's body to cleanse, promote attractiveness or alter the appearance. The ancient Egyptians applied perfumes and anointing oils to the body as early as 4000 B.C. Since Vedic period, India has rich and varied flora of herbal and medicinal plants.

The Aryan period witnessed the use of turmeric, saffron, indigo, raktachandan etc., for beautification. Using Mehndi for dying and conditioning hair was also practiced in the older times. Thus, the concept of beauty and herbal cosmetics is as old as mankind and civilization. Natural skin care has its roots in the 4th millennium BC in China and the Middle East. In the modern age many people with unique skin types and needs (sensitive skin, dry skin, and oily skin) have turned to natural skin care solutions.

Some examples of natural skin care ingredients include Jojoba, Safflower oil Some examples of natural skin care ingredients include Jojoba, Sunflower oil, Rose hip seed oil, shea butter, beeswax, witch hazel, aloe Vera, tea tree oil, and chamomile. Many of these natural ingredient combinations can be tailored specifically to the individual's skin type or skin condition.

The term natural has considerable market value in promoting skin care cosmetic products to consumers. preservatives are commonly used to preserve the safety and efficacy in these products.

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**Why we use preservatives?**

Especially as a cream in jars, cosmetic product come in frequent contact with the non-sterile human skin, there by coming easily contaminated by microbes containing water, oils, peptides and carbohydrates cosmetics are a very good medium for growth of microbes. All these factors contribute to the fact that cosmetic products need very good preservative to prevent microbial growth and spoiling of the cosmetic product and also infection of the skin. Generally, shampoos and other rinse products need less preservative than leave on product as creams and decorative cosmetic.

Preservatives can maintain the shelf life of product for about 2 to 3 years. With ingredients such as essential oils and antioxidants that act as preservative natural skin care products can be produced with a limited shelf life. Essential oils are natural substances that are powerful preservative but are not extensively used to preserve cosmetic products. They are derived from flowers, leaves, grasses and woody plants.

**What makes a good preservative?**

To overcome the broad spectrum of microbes, and at the same time, not to be harmful to the skin and deleterious to other ingredients in a cosmetic product it is critical to use the right preservative. The optimal preservative should have the following attributes.

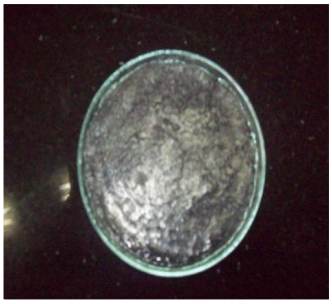
- Broad spectrum activity (bacteria and fungi)
- Be effective over the anticipated shelf life
- Be preferably liquid and water soluble
- Be effective over a wide pH range
- Not be deactivated by other ingredients
- Be odorless, colorless and safe

**Selected natural oil and extract as preservatives**

1. Tea tree oil (*Melaleuca alternifolia*)
2. Eucalyptus oil (*Eucalyptus globulus*)

**Why select these oils as Preservatives?**

The use of Essential oils in the production of cosmetics and related products may have several advantages. Essential oils in cosmetic formulations at relatively high concentrations are likely to provide skin benefit. Essential oils have been shown to possess antibacterial, antifungal, antiviral insecticidal and antioxidant properties. Some oils have been used in cancer treatment. Some other oils have been used in aromatherapy and fragrance industries. Essential oils are a rich source of biologically active compounds. There has been an increased interest in looking at antimicrobial properties of extracts from aromatic plants particularly essential oils. Essential oils such as Cinnamon, Clove, Eucalyptus, Geranium, Lavender, Rosemary, and Turmeric have been traditionally used by people for various purposes in different parts of the world. Cinnamon, Clove and Rosemary oils had shown antibacterial and antifungal activity; Cinnamon oil also possesses antidiabetic property. Cinnamon oil showed promising inhibitory activity even at low concentration. Rosemary oils possess antioxidant property. Lavender oil has shown antibacterial and antifungal activity; it was also found to be effective to treat burns and insect bites.



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## II. MATERIALS AND METHODS

The Experimental Material: -Gel and Cream, Essential oils use as Preservatives (Collected from Gayatri Herbal PVT. LTD.)

**Gel Formation**

Composition: Base Aloe Gel (For ~100ml), 88ml Spring Water, 1g/2ml tsp Xanthan Gum, 10ml Aloe Vera extract, 12 drops(0.6ml/g) Preservative.

Method: Measure the water in a jug & pour into a bowl. Weigh 1gm or measure a level 2ml measuring spoon with Xanthan Gum powder.

Sprinkle the Xanthan Gum powder over the water little by little, whisking vigorously. If Gel gets lumpy, blend until smooth with a stick blender. When there are no more lumps, stop whisking or blending immediately. Add all of the pre-measured ingredients and mix in to the Gel. All the methods will keep for 1.5-2years.

**Cream Formation**

Composition:

Fat Stage (75-80$^0$C)- 6ml Vegetable oil, 2g Bees wax, 2g acetyl Alcohol, 3g VE Emulsifier

Water Stage (75-80$^0$C)- 4f MF Emulsifier, 75ml Boiling Spring Water, 4ml/g Glycerin, 12 drops(0.6ml/g) preservative

Third Stage (40-35$^0$C)- 2ml NFF Moisturizer, 1ml/g Vitamin E oil (undiluted)

Fourth Stage (35-25$^0$C)- 20 drops Essential oil,

**Method:**

- Heat the fat stage ingredients in a double boiler until all of the ingredients have melted and the temperature has risen to 75-80$^0$C. There is no use a whisk at this stage.
- After boiling the Spring Water in a Kettle, measure it according to the recipe and pour it over the MF Emulsifier and the Glycerin, Sorbitol and preservative, which have put into a separate double boiler.
- Whisk the water stage ingredients well together, making sure that the MF Emulsifier powder is fully dissolved in the water and that don't have any lump. Then allow the mixture to heat to 75-80$^0$C.
- When both fat and water stages are over 75$^0$C, remove both double boilers from the hob, keeping the water stage mixture hot by leaving it on the top half of the double boiler.
- Now pour the melted fat stage into the water stage in a thin, steady stream, while continuously whisking the mixture from side to side for 5 minutes. If necessary, use a spatula to scrape the mixture from the sides of the bowl.
- Allow the mixture to cool, stirring all the time. Speed up by the cooling process by replacing the hot water in the double boiler with very cold water. In the process of cooling down, the mixture becomes a cream and will reach it thickest consistency when it is has cooled down to room temperature.
- Stir in the Third stage ingredients when the mixture has cooled to under 40$^0$C. Continue stirring until the mixture has cooled under 30$^0$C then thoroughly mix in the Essential oils.
- Pour the cream into jar and label.

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Concentration of essential oil used as preservatives:

- Tea tree oil (0.1%, 0.2%, 0.3%, 0.4%, 0.5%)
- Eucalyptus oil (0.1%, 0.2%, 0.3%, 0.4%, 0.5%)

**2.1 Method:**

| Sample | Microbial assays (Various conc.) | Qualitative test (Various conc.) |
|---|---|---|
| Cream | 15 day's analysis | 15 day's analysis |
| | 30 day's analysis | 30 day's analysis |
| | 45 day's analysis | 45 day's analysis |
| | 60 day's analysis | 60 day's analysis |
| Gel | 15 day's analysis | 15 day's analysis |
| | 30 day's analysis | 30 day's analysis |
| | 45 day's analysis | 45 day's analysis |
| | 60 day's analysis | 60 day's analysis |

**Preparation of Sample:**

- Cinnamon oil, Eucalyptus oil, Tea tree oil, Clove oil and the combination of these oils are added in Cream and gel as preservatives separately.
- The preservatives are added in cream and gel at different concentration such as 0.1%, 0.2%, 0.3%, 0.4% and 0.5% separately.

**Various Microbial Assay & Qualitative Changes was Estimated by following methods:**

**Microbial assays:**

- Bacterial contamination
- Fungal contamination

**Qualitative study:**

- pH test
- Visual appearance
- Stability at $45^0$C and $54^0$C
- Solubility
- Skin irritation test

## III. OBSERVATION AND RESULT

**3.1 Test for Qualitative Study**

**Table. 1.1:** Preliminary Test (Qualitative Assay) for Gel & Cream

| Test | Preliminary Test for Gel | Preliminary Test for Cream |
|---|---|---|
| pH | 6 | 6.5 |
| Visual appearance | Soft | Smooth, soften |
| Stability at $45^0$C | Dried | Dried |
| stability at $54^0$C | Dried | Dried, oil layer separated |
| Skin irritation test after 24 hours | No skin irritation | No skin irritation |
| Disperse in water | Colorless solution obtained | Turbid solution |
| Moisture content | 98% | 80% |

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**Table: 1.2:** Preliminary Test for Cream at Various Concentrations: -

| Oil use as Preservative | Conc. | pH | Visual appearance | Stability $45^0$ C | Stability $54^0$C | Irritation test |
|---|---|---|---|---|---|---|
| Eucalyptus oil | 0.1% | 6.5 | Soft | Dried | oil layer separated | No skin irritation |
| | 0.2% | 6.5 | Soft | Dried | oil layer separated | No skin irritation |
| | 0.3% | 6.5 | Soft | Dried | oil layer separated | No skin irritation |
| | 0.4% | 6.5 | Soft | No changes | oil layer separated | No skin irritation |
| | 0.5% | 6.5 | Soft | No changes | oil layer separated | No skin irritation |
| Tea tree oil | 0.1% | 6.5 | Smooth | Dried | oil layer separated | No skin irritation |
| | 0.2% | 6.5 | Smooth | Dried | oil layer separated | No skin irritation |
| | 0.3% | 6.5 | Soft | No changes | oil layer separated | No skin irritation |
| | 0.4% | 6.5 | Soft | No changes | oil layer separated | No skin irritation |
| | 0.5% | 6.5 | Soft | No changes | oil layer separated | No skin irritation |

**Table: 1.3:** Preliminary Test for Gel at Various Concentrations: -

| Oil use as Preservative | Conc. | pH | Visual appearance | Stability $45^0$ C | Stability $54^0$C | Irritation test |
|---|---|---|---|---|---|---|
| Eucalyptus oil | 0.1% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.2% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.3% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.4% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.5% | 6 | Soft | No changes | Dried | No skin irritation |
| Tea tree oil | 0.1% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.2% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.3% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.4% | 6 | Soft | No changes | Dried | No skin irritation |
| | 0.5% | 6 | Soft | No changes | Dried | No skin irritation |

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## IV. ANALYSIS OF BACTERIAL CONTAMINATIONS (In TVC)

### A. Eucalyptus oil use as preservative

**Table 2.1:** Bacterial contamination observed in Gel (No. of colonies) – (Photo plate 5.A)

| | 0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% |
|---|---|---|---|---|---|---|
| 15th day | 10 | 4 | 3 | 3 | 2 | 1 |
| 30th day | 14 | 5 | 3 | 2 | 2 | 1 |
| 45th day | 29 | 5 | 3 | 3 | 2 | 1 |
| 60th day | 33 | 5 | 5 | 4 | 3 | 1 |

**Table.2.2:** Bacterial contamination observed in Cream (No. of colonies) – (Photo plate 5.B)

| | 0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% |
|---|---|---|---|---|---|---|
| 15th day | 4 | 4 | 3 | 3 | 2 | 1 |
| 30th day | 10 | 3 | 3 | 3 | 2 | 1 |
| 45th day | 20 | 4 | 2 | 3 | 1 | 1 |
| 60th day | 22 | 5 | 4 | 3 | 2 | 2 |

### B. Tea tree oil as preservative

**Table 2.3:** Bacterial contamination observed in Gel (No. of colonies) – (Photo plate 5.A)

| | 0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% |
|---|---|---|---|---|---|---|
| 15th day | 10 | 6 | 4 | 2 | 2 | 1 |
| 30th day | 14 | 7 | 4 | 2 | 2 | 1 |
| 45th day | 29 | 8 | 4 | 2 | 1 | 1 |
| 60th day | 33 | 9 | 6 | 3 | 1 | 1 |

**Table 2.4:** Bacterial contamination observed in Cream (No. of colonies) – (Photo plate 5.B)

| | **0%** | **0.1%** | **0.2%** | **0.3%** | **0.4%** | **0.5%** |
|---|---|---|---|---|---|---|
| 15th day | 4 | 3 | 2 | 2 | 1 | 1 |
| 30th day | 10 | 4 | 3 | 1 | 1 | 1 |
| 45th day | 20 | 3 | 3 | 2 | 1 | 0 |
| 60th day | 22 | 6 | 4 | 3 | 0 | 0 |

## V. ANALYSIS OF FUNGAL CONTAMINATION (In TVC)

### A. Eucalyptus oil as preservative –

**Table 3.1:** Fungal contamination observed in Gel (No. of colonies) – (Photo plate 6.A)

| | 0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 2 | 2 | 2 | 1 | 0 |
| 30th day | 5 | 3 | 2 | 2 | 1 | 1 |
| 45th day | 9 | 4 | 2 | 2 | 1 | 1 |
| 60th day | 13 | 4 | 3 | 3 | 1 | 1 |

**Table 3.2:** Fungal contamination observed in Cream (No. of colonies) – (Photo plate 6.B)

| | 0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 2 | 2 | 1 | 1 | 0 |
| 30th day | 4 | 2 | 2 | 1 | 1 | 1 |
| 45th day | 7 | 2 | 3 | 2 | 1 | 1 |
| 60th day | 11 | 4 | 3 | 2 | 1 | 1 |

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**B. Tea Tree oil as preservative –**

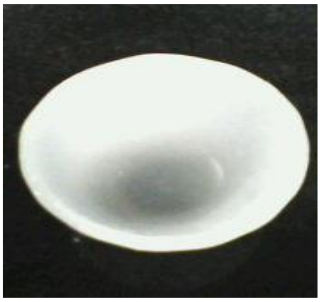
**Table 3.3:** Fungal contamination observed in Gel (No. of colonies) – (Photo plate 6.A)

| | 0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 3 | 2 | 1 | 1 | 0 |
| 30th day | 5 | 3 | 2 | 2 | 1 | 1 |
| 45th day | 9 | 3 | 3 | 2 | 1 | 1 |
| 60th day | 13 | 5 | 3 | 2 | 2 | 1 |

**Table.3.4:** Fungal contamination observed in Cream (No. of colonies) – (Photo plate 6.B)

| | 0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 2 | 2 | 1 | 1 | 0 |
| 30th day | 4 | 2 | 2 | 1 | 1 | 1 |
| 45th day | 7 | 3 | 2 | 1 | 1 | 1 |
| 60th day | 11 | 3 | 2 | 2 | 1 | 1 |

**PHOTO PLATES**

| **Moisture content of Gel** | **Moisture content of Cream** |
|---|---|
| **Photo plate 1** | **Photo plate 2** |
|  |  |

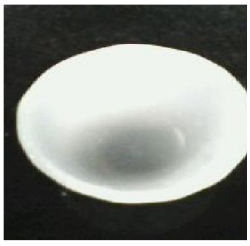
| **Stability of Cream at 45°C and 54°C respectively** | | **Stability of Gel at 45°C and at 54°C respectively** | |
|---|---|---|---|
| **Photo plate 3.a** | **Photo plate 3.b** | **Photo plate 4.a** | **Photo plate 4.b** |
|  |  |  |  |

**Photo plate 5.A: Analysis for Bacterial contamination in Gel**

Bacterial contamination observed in Gel due to Clove oil, Cinnamon oil, Eucalyptus oil, Tea tree oil, combination of all oil as preservatives.

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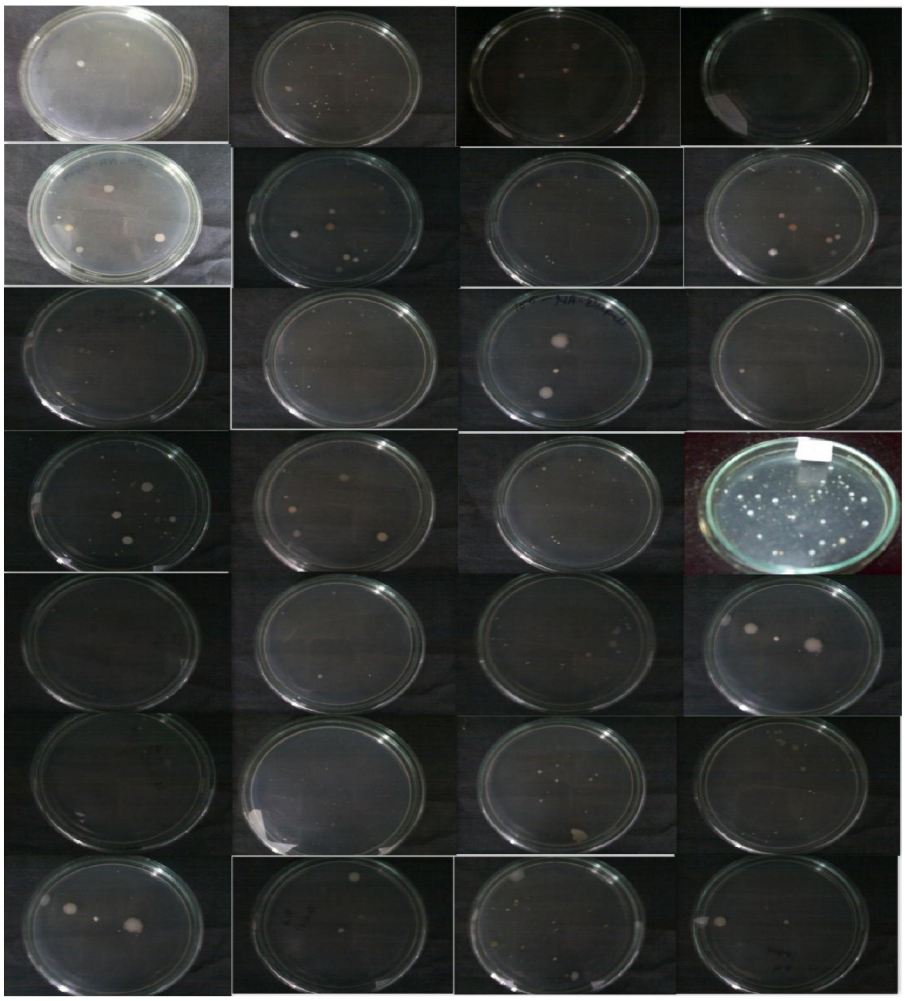
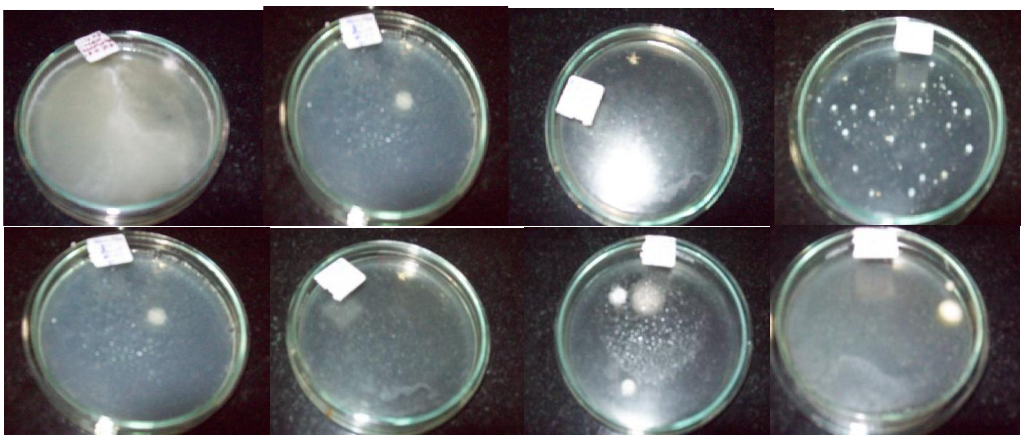


**Photo plate 5.B: Analysis for Bacterial contamination in Cream**
**Bacterial contamination observed in Cream due to use of Eucalyptus oil, Tea tree oil as preservatives.**



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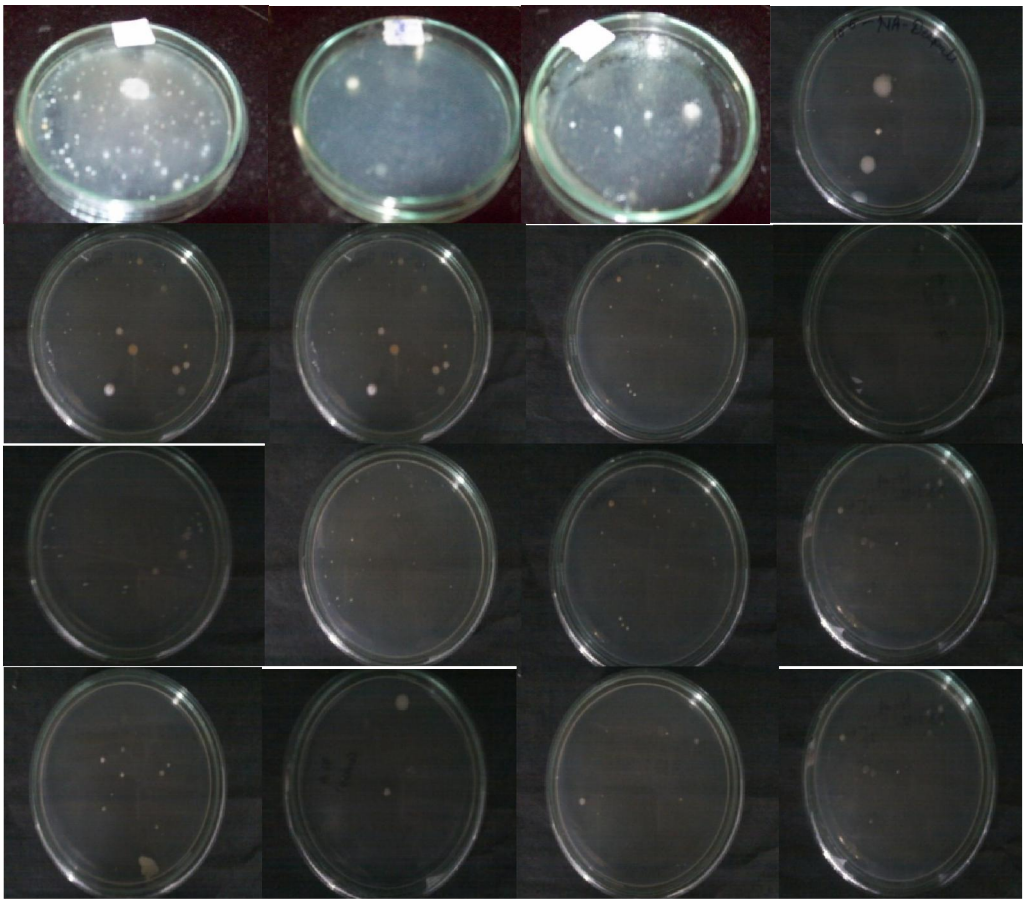

**Photo plate 6.A: Analysis for Fungal contamination in Gel**

**Fungal contamination observed in Gel due to use of Eucalyptus oil, Tea tree oil as preservatives.**

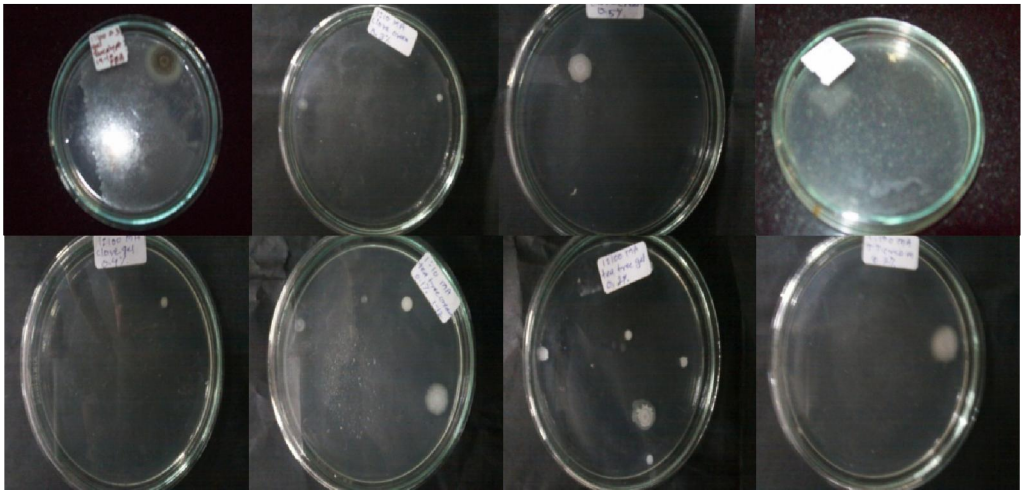

**Photo plate 6.B: Analysis for Fungal contamination in Cream**

**Fungal contamination observed in cream due to use of Eucalyptus oil, Tea tree oil as preservatives.**

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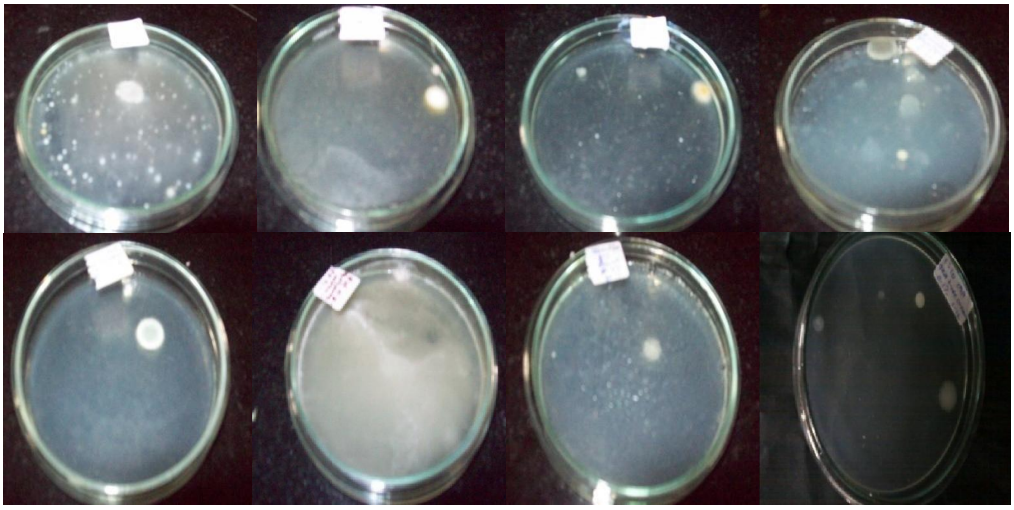


## VI. RESULTS AND DISCUSSION

**Moisture Content**

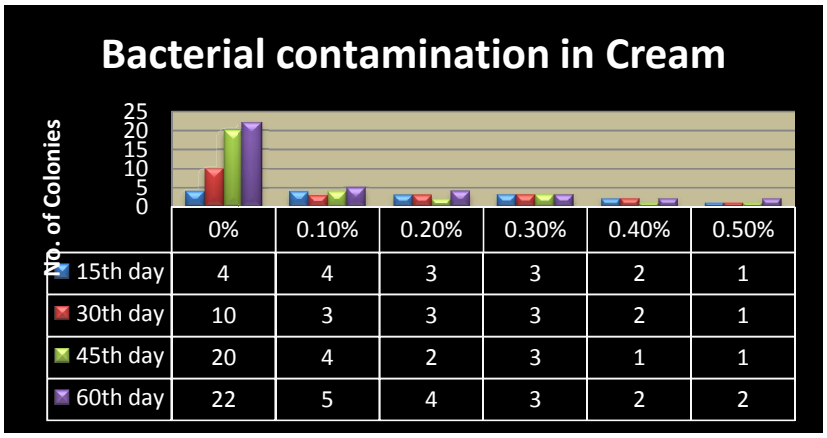
Moisture content of cream was 80%. (photo plate 1)

Moisture content of gel was 98%. (photo plate 2)

**Qualitative Test**

According to Qualitative tests both Cream and Gel shows no difference in pH, visual appearance, stability at 45°C and 54°C, Skin irritation test of 15-day interval. (Table 1.3 and 1.4)

**ANALYSIS OF BACTERIAL CONTAMINATION FOR CREAM**




| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 4 | 4 | 3 | 3 | 2 | 1 |
| 30th day | 10 | 3 | 3 | 3 | 2 | 1 |
| 45th day | 20 | 4 | 2 | 3 | 1 | 1 |
| 60th day | 22 | 5 | 4 | 3 | 2 | 2 |

**Graph 1.1:** Eucalyptus oil added as preservative in cream gave minimum bacterial contamination in 0.4%, 0.5% conc. maximum in 0.1%, 0.2% conc.

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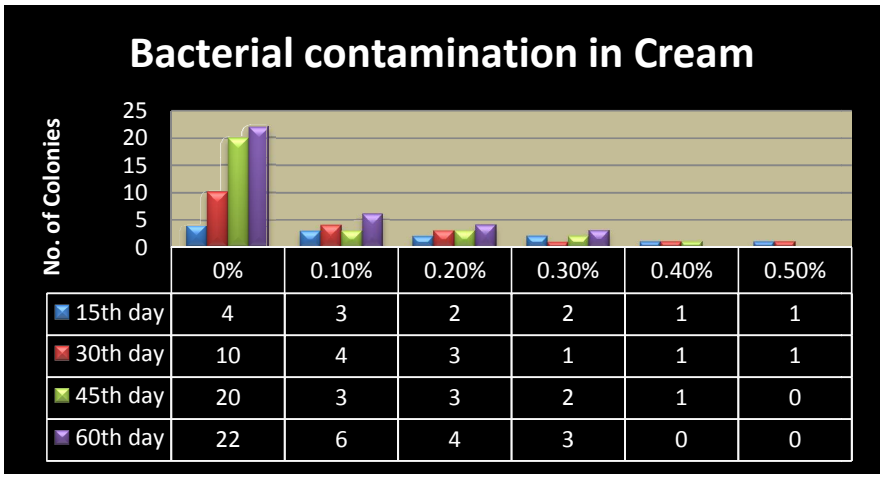
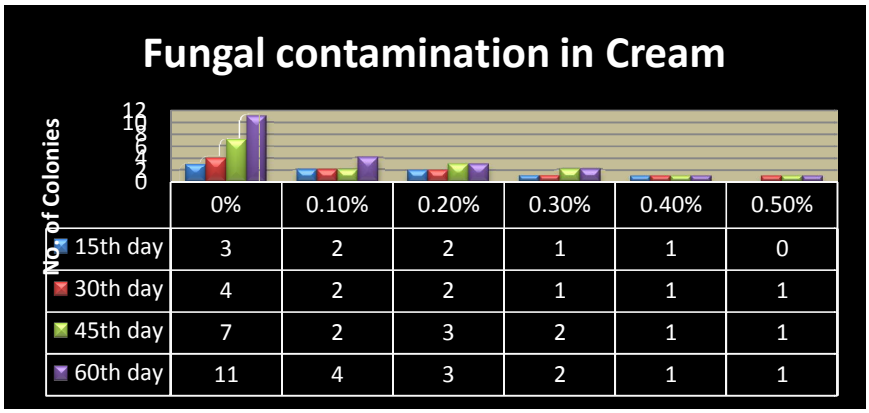



| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 4 | 3 | 2 | 2 | 1 | 1 |
| 30th day | 10 | 4 | 3 | 1 | 1 | 1 |
| 45th day | 20 | 3 | 3 | 2 | 1 | 0 |
| 60th day | 22 | 6 | 4 | 3 | 0 | 0 |

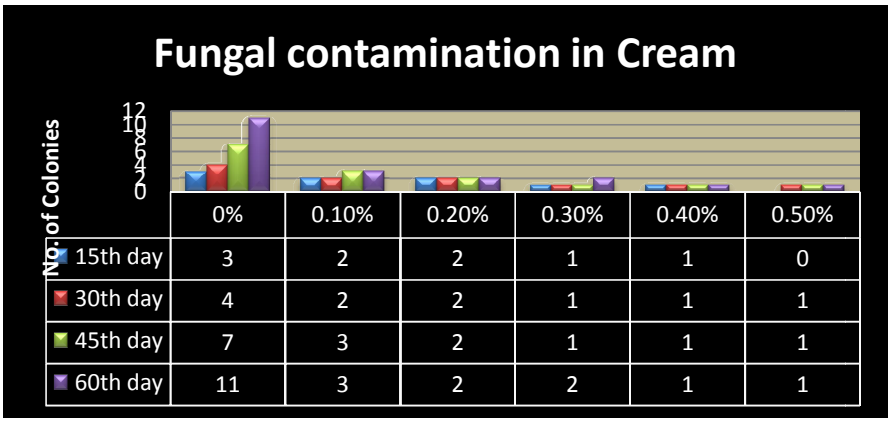
**Graph 1.4:** Tea tree oil added as preservative in cream gave minimum bacterial contamination in 0.3%, 0.4%, 0.5% conc. and maximum 0.1% conc.

**ANALYSIS OF FUNGAL CONTAMINATION FOR CREAM**




| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 2 | 2 | 1 | 1 | 0 |
| 30th day | 4 | 2 | 2 | 1 | 1 | 1 |
| 45th day | 7 | 2 | 3 | 2 | 1 | 1 |
| 60th day | 11 | 4 | 3 | 2 | 1 | 1 |

**Graph 1.6:** Eucalyptus oil added as preservative in cream gave minimum fungal contamination in 0.5% conc. and maximum in 0.1% conc.




| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 2 | 2 | 1 | 1 | 0 |
| 30th day | 4 | 2 | 2 | 1 | 1 | 1 |
| 45th day | 7 | 3 | 2 | 1 | 1 | 1 |
| 60th day | 11 | 3 | 2 | 2 | 1 | 1 |

**Graph 1.9:** Tea tree oil added as preservative in cream gave minimum fungal contamination in 0.3%, 0.4%, 0.5% and maximum 0.1% conc.

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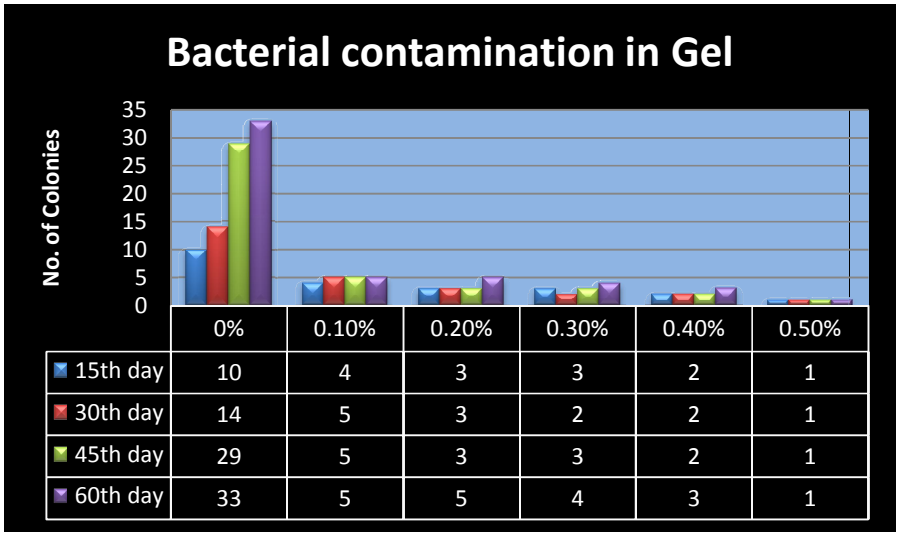
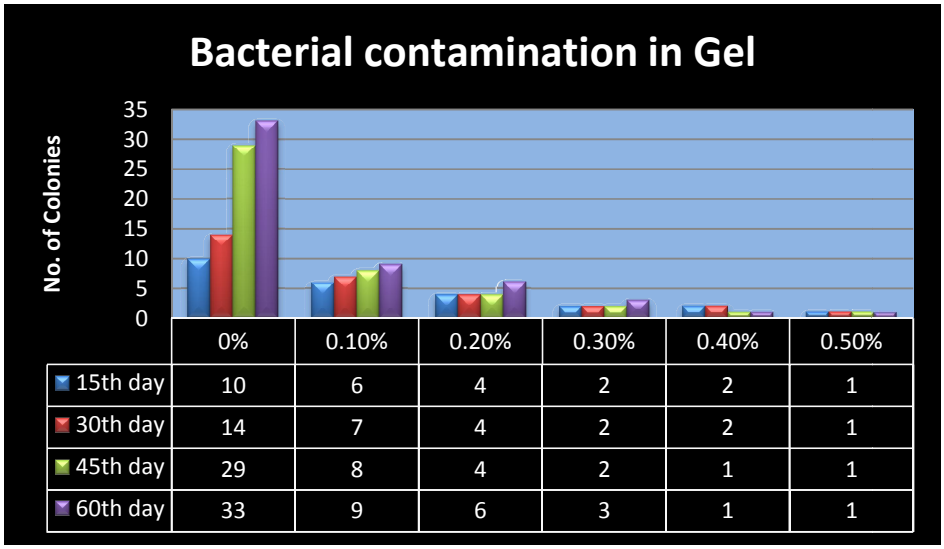
ANALYSIS OF BACTERIAL CONTAMINATION FOR GEL




| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 10 | 4 | 3 | 3 | 2 | 1 |
| 30th day | 14 | 5 | 3 | 2 | 2 | 1 |
| 45th day | 29 | 5 | 3 | 3 | 2 | 1 |
| 60th day | 33 | 5 | 5 | 4 | 3 | 1 |

**Graph 2.1:** Eucalyptus oil added as preservative in gel gave minimum bacterial contamination in 0.5%, 0.4% conc. and maximum in 0.2% conc.




| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 10 | 6 | 4 | 2 | 2 | 1 |
| 30th day | 14 | 7 | 4 | 2 | 2 | 1 |
| 45th day | 29 | 8 | 4 | 2 | 1 | 1 |
| 60th day | 33 | 9 | 6 | 3 | 1 | 1 |

**Graph 2.4:** Tea tree oil added as preservative in gel gave minimum bacterial contamination in 0.5%, 0.4%, 0.3% as compare to 0.2% conc.

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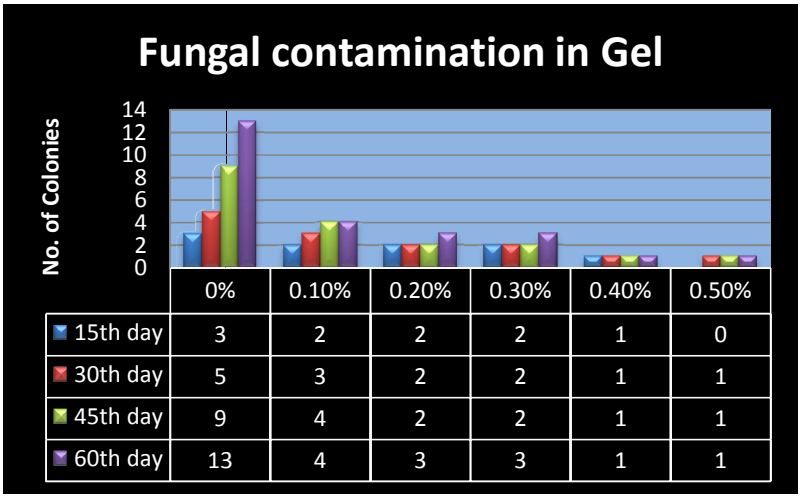
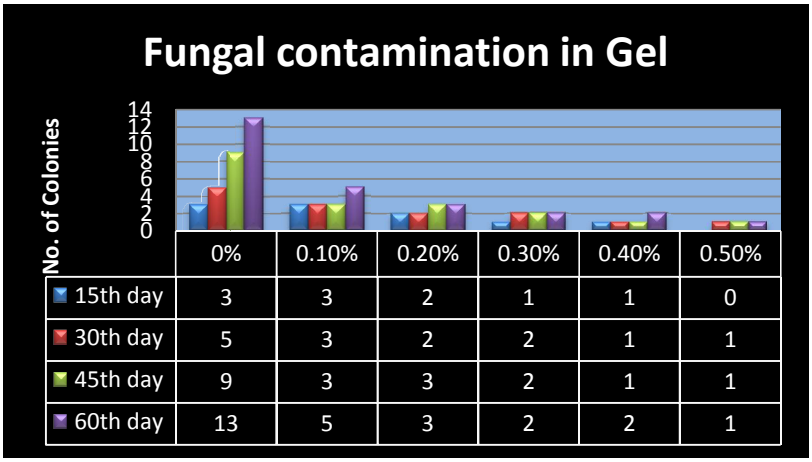
ANALYSIS OF FUNGAL CONTAMINATION FOR GEL




| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 2 | 2 | 2 | 1 | 0 |
| 30th day | 5 | 3 | 2 | 2 | 1 | 1 |
| 45th day | 9 | 4 | 2 | 2 | 1 | 1 |
| 60th day | 13 | 4 | 3 | 3 | 1 | 1 |

**Graph 2.6:** Eucalyptus oil used as preservative in gel gave minimum fungal contamination in 0.5% conc.




| | 0% | 0.10% | 0.20% | 0.30% | 0.40% | 0.50% |
|---|---|---|---|---|---|---|
| 15th day | 3 | 3 | 2 | 1 | 1 | 0 |
| 30th day | 5 | 3 | 2 | 2 | 1 | 1 |
| 45th day | 9 | 3 | 3 | 2 | 1 | 1 |
| 60th day | 13 | 5 | 3 | 2 | 2 | 1 |

**Graph 2.9:** Tea tree oil used as preservative in gel gave minimum fungal contamination in 0.5% conc. As compare to 0.1%, 0.2%, 0.3% conc.

## VII. DISCUSSION

Lavandula officinalis, and Rosmarinus officinalis, to be used as natural cosmetic preservatives in an aqueous cream formulation for antimicrobial activities against bacteria and fungi. All the test microorganisms used in this study were generally more susceptible to the oils during the challenge test in aqueous cream compared to the antimicrobial test performed on agar. The 0.5% (vol/wt) essential oil of Rosemary was completely inhibitory (Dr. ReyhanIrkinet al., 2011). Clove essential oils were the most inhibitory against bacteria and yeasts. Tea tree oil inhibited the yeasts actively. (ReyhanIrkin and Mihriban K. 2009). In this study, I observed that the Tea tree oil was shown most inhibitory against bacteria and yeast as compare to Clove oil.

Eucalyptus, cinnamon exhibited the greatest antibacterial activities. The Gram-positive bacteria were more susceptible to the volatile oils than the Gram-negative. combinations of oils were found to exhibit greater antibacterial activity as compared with each oil used separately. Maruzzella J.C. and Henry P. A. (2006). In this study, I found that the combination of all oils as well as Cinnamon oil exhibit greater antibacterial activity as compared with each oil used separately.

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## IX. CONCLUSION

In this study, the herbal cosmetic products were tested for different test parameters. The two herbal cosmetics selected at regular interval microbial contaminants, were also studied to proven efficacy of essential oil as Natural Preservative and exhibit excellent anti-bacterial, anti-fungal properties. These natural preservatives were dose not change in their pH, moisture content, texture, stability of herbal cosmetic products. Tea tree oil were shown more effective results as a natural preservative, compare to Eucalyptus oil in Gel. Tea tree oil were shown more effective results as a natural preservative, as compared to Eucalyptus oil in cream.

## X. SUMMARY

Herbal cosmetic products are made from plant material or plant extract. Herbal or any organic cosmetic product come in frequent contact with the non-sterile human skin, there by coming easily contaminated by microbes containing water, oils, peptides and carbohydrates cosmetics are a very good medium for growth of microbes. To avoid or overcame this situation preservatives are added. Synthetic preservatives if added might have side effects on the consumer's organ on which it is applied. So Natural preservative were taken to study its effect on physicochemical properties and shelf life of cosmetic products.

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