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Study of Antimicrobial Activity of Natural Hair Oil GCM-F1 and GK-F2

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Abstract

Three different plant parts were collected and the hair oils was extracted, in this project the antimicrobial activity of the two natural hair oil formulations was studied on the nutrient agar plates by spread plate technique in which pond water was taken for the bacterial load by using the five different concentrations.

***Keywords:** Nutrient agar, Extraction method, GCM-F1, GK-F2, Pond water, Nutrient broth, Autoclave*

Introduction

Hair is the most important organ in our body, which gives the proper physical appearance to a person, also it protects the head from the heat shocks, so it is very important for us to protect our hair, Hair growth and texture indicates the person health [1].

Hair oil protects the hair from heat shock and it gives the hair shiny look not only this but also it traps the dust and protects the hair skin from infections, splits, hair fall and dandruff [2,3]. Hence it is very important to take the frequent head bath after every apply of oil to head, penetration of oil into the hair skin is not much, as everyone knows that our cell membranes are made of phospholipids, that's why there will be a lipid-lipid repulsion, but the contents used in the hair oil preparations they will penetrate into the skin and they help in the hair growth and also the antimicrobial activity.

Hair oil also protects the hair from damage which causes because of the dehydration. There are different hair oils like coconut oil, sesamum oil, Almond oil, Castor oil, and olive oil. The different minerals in the hair oils function differently in the hair growth and protection [4-6].

Coconut oil

Coconut oil has a good source of vitamin E and K and also iron, It also used as an edible oil in some south states. It is the one of the best ancestral hair oil which is used for the hair growth. Coconut oil became the main ingredient in the preparation of natural hair oil products [7].

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Almond oil

Almond oil is the good source of vitamin E than other hair oils, it also consists high quantity of calcium. It gives the smooth texture to the hair.

Sesamum oil

Sesamum oil is a rich source of folic acid and iron, these two ingredients is very important for the hair growth [8].

Methodology

Extract preparation

Three different parts from the plants are selected cleaned and air dried, Parts were heat boiled in the coconut oil separately according to the mentioned formulation names, after the boiling the color of the oil got changed and then the oil was filtered and collected in the containers through an autoclaved cloth [9-11].

Sample preparation

Nutrient broth composition

Peptone-0.5%

Beef extract-0.3%

Yeast extract-0.3%

Nutrient broth was prepared for 50 ml and then autoclaved for 1 hr 30 min at 15 lbs pressure, after the autoclaving process the broth was taken out and cooled In the laminar hood, the pond water sample which was collected, 1 ml of it is transferred into the 50 ml broth and then kept into the rotatory shaker incubator for overnight incubation [12,13].

Antimicrobial study

Nutrient agar composition

Peptone – 0.5%

Beef extract – 0.3%

Yeast extract – 0.3%

Agar – 1.2%

As nutrient agar is the common for growth of every organism and in this project over all antimicrobial activity was checking, that's why it was selected, All the ingredients are weighed according to the composition and then 500 ml Nutrient agar was prepared, kept in the Autoclave for sterilization, Media was poured in the Petriplates under laminar hood, after the plates got solidified, the culture which kept for the overnight incubation was kept in the laminar hood and treatment was given according to the below table, All the plates were kept in duplicates total 28 plates for both the formulations [14].

Plates were kept in the incubator for overnight incubation at 37℃ **(TABLE 1)**.

TABLE 1. **Antimicrobial activity of natural hair in different concentration.**

NC	PC	Concentration 1	Concentration 2	Concentration 3	Concentration 4	Concentration 5
A negative control without any inoculation	Positive control with 100 µl of culture	100 µl culture with 10 µl oil	100 µl culture with 20 µl oil	100 µl culture with 40 µl oil	100 µl culture with 80 µl oil	100 µl culture with 100 µl oil

Result

After the overnight incubation, the no of colonies observed in each plate is mentioned in the below **TABLE 2.**

TABLE 2. **No. of colonies observed after overnight incubation.**

Plates	Negative control	Positive control	Conc 1 10 µl	Conc 2 20 µl	Conc 3 40 µl	Conc 4 80 µl	Conc 5 100 µl
Formulation 1	No colonies	1680	1504	1380	1138	835	300
formulation 2	No colonies	1650	1515	1425	1104	750	125

The no of colonies mentioned in the above **TABLE 2** is the average of both the duplicates plates **(FIG. 1)** [15,16].

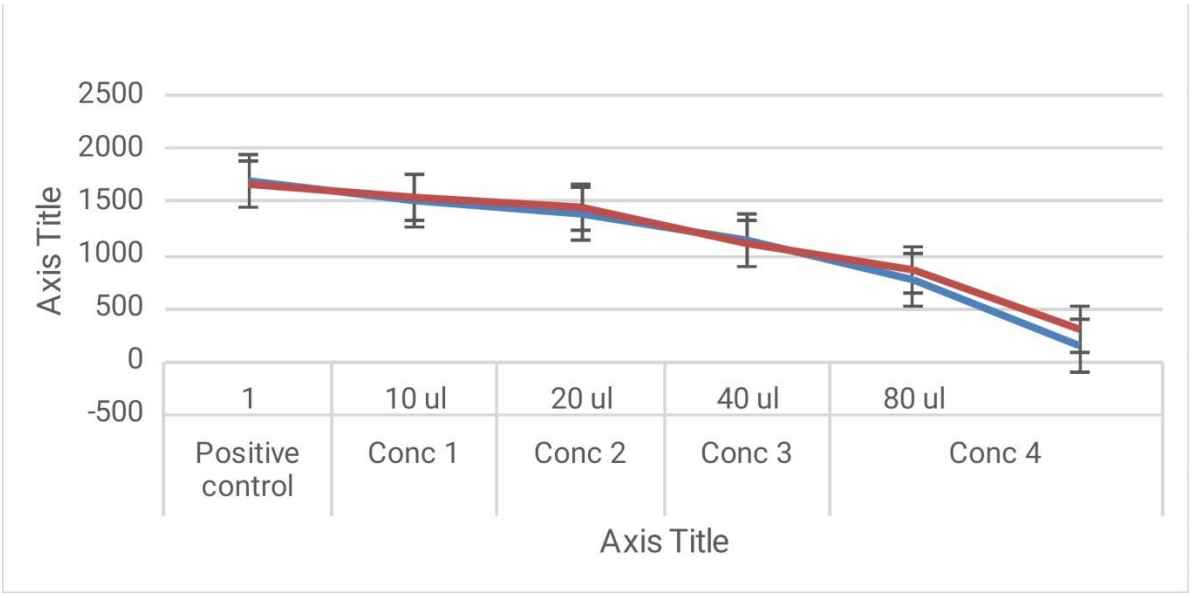

FIG. 1. **Antimicrobial activity of natural hair oil GCM-F1 and GK-F2.**

Conclusion

The graphical and tabular forms shows that at the two higher concentrations of the formulation (blue line) GK-F2 (80 µl and 100 µl) shown the good antimicrobial activity than the (orange line) GCM-F1 (100 µl) comparing to the other lower

concentrations, and also shown that the antimicrobial load decreasing by concentration wise and also shown that there are no colonies in the control plates, this data helps us that these oils had shown a very good antimicrobial activity.

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