ISSN No:-2456-2165

Development of Kadha Tablet and its Proximate Analysis, Antimicrobial Activity and Antioxidant (DPPH) Estimation

Shreya singh[1*], Sunita Mishra[2*]
[1]M.sc Student, [2*]Professor
Department of Food and Nutrition, School of Home Science,
Babasaheb Bhimrao Ambedkar University (A Central University), Lucknow, Uttar Pradesh, India
Corresponding Author: Prof. Sunita Mishra[2*]

Abstract:-
Introduction: Medicinal plants have been employed in healthcare. The medicinal plants are helpful for treating human illnesses as well as curing them. Ashwagandha is a particularlypotent herb because even a small amount of it can promote immunity, increase. Infertility, and control testosterone. it has anti-inflammatory, analgesic, and hyperglycemic effects. Kadha issaid to be helpful for treating mild diseases such as the common cold and cough.

Materialsand Methods: Antimicrobial, antioxidant and proximate test of kadha powder. Result: Thekadha tablet exhibits an average level of microbial growth according to the zones of inhibition of the studied extracts. This radical form exhibits decolorization (a yellow hue) in comparisonto the DPPH-H state as the quantity of electrons gathered rises. Moisture content of therapeuticKadha tablet found to be 16.40%. The ash content representing mineral matter is 9.29%. The protein, body building nutritional component is 2.05g/100g in therapeutic Kadha tablet. In this therapeutic Kadha tablet Fat is almost 0g. pH in therapeutic Kadha tablet is 4.23. Conclusion: The efficiency and mechanism of action of the bioactive chemicals found in common Indian herbs and spices against deadly viruses must be thoroughly studied.

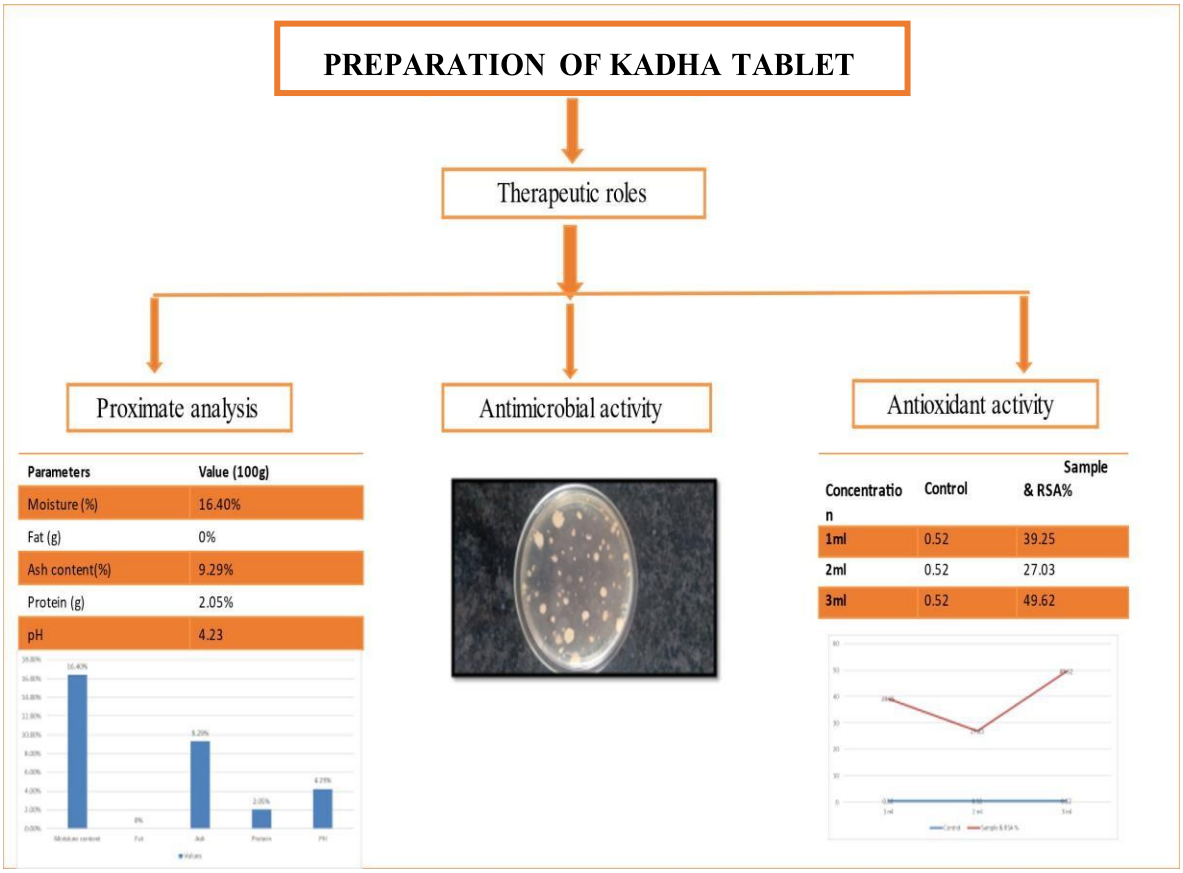


Fig. 1: Preparation of Kadha Tablet

Keywords:- *Hyperglycemic, Analgesic, DPPH, Therapeutic, bioactive.*

ISSN No:-2456-2165

I. INTRODUCTION

Medicinal plants have been employed in healthcare. The medicinal plants are helpful for treating human illnesses as well as curing them. The promotion and use of medicinal plants complement all current illness preventive measures and serve critical roles in disease prevention. Every day, more studies are being done and more herbal medicine is being used to cure illnesses. Plants are crucialin the development of medical properties, both therapeutic and preventive (1). The information on numerous illnesses affecting aromatic and medicinal crops is very dispersed (2). Due to the availability of natural chemicals, medicinal plants are a key source of molecules with therapeutic qualities. Due to the presence of phytochemical elements, medicinal plants are helpful fortreating human ailments and play a significant part in healing. The rare and organic medicinal herbs are used to treat a variety of illnesses and generate money. The use of the drugs in traditional medicine was a factor in several of these isolations (3) .These plants may include the following because manyof them have anti-inflammatory compounds such plants are ginger, tulsi and ashwagandha. Withania somnifera, also known as ashwagandha, has been used as a medication to treat a varietyof illnesses. Its roots possessed all the strength needed to be utilised as a powder in conventional Ayurvedic or Indian medicine. In order to get a herbal product with better nutritional value and acceptable sensory characteristics, ashwagandha is proven to be the most acceptable option (4). Ashwagandha is a particularly potent herb because even a small amount of it can promote immunity, increase fertility, and control testosterone. It is frequently found in ayurvedic medications (5).Although this plant has many uses, the roots are the most frequently used component. It aids in the treatment of numerous illnesses, including cholesterol, diabetes, rheumatoid arthritis, stress, anxiety, fatigue, muscle pain, and skin issues. The primary justifications for herbal medicine's safety have attracted large pharmaceutical companies towards studies of herbal plants (6). Ginger (Zingiber officinale), which is now commonly used in tea, not only gives food a delightful flavor, but it is also packed with nutrients. Since ancient times, people have been using their root to cure illnesses and prepare food. Fresh, dried, and preserved ginger can be used as a spice or developed into tablets, capsules, and liquid extracts. It was particularly well-known in Asian medicine as a remedy for digestive issues like nausea and diarrhea. Other diseases that ginger is used to treat include burns, stomach pain, menstrual cramps, muscular, joint pain, cold and flu symptoms. Ginger could treat a variety of conditions, including cancer, diabetes mellitus, degenerative diseases like arthritis and rheumatism, digestive problems like indigestion and constipation, ulcers, and cardiovascular diseases like atherosclerosis and hypertension (7). Additionally, it has anti-inflammatory, analgesic, and hyperglycemic effects.Tulsi (Ocimum sanctum Linn) tastes is unusual and has a distinctive aroma. It can grow up to 3-5 feet tall. 2,3 The majority of Ayurvedic medications are made with tulsi leaves. Tulsi has a wide range of traditional medicinal purposes, including the treatment of psoriasis, dermatitis, and the signs of ageing. Additionally, it is employed as an antibacterial, immune system builder, anti-inflammatory, and stress reliever (8). The Tulsi extracts must be beneficial for treating a wide range of illnesses, including the common cold, heart conditions, headaches, stomach problems, kidney stones, and many more. The ability may be antibacterial, pharmacological, therapeutic, nutritional, or even rely on a certain concentration of phytochemicals to protect cells (9). The Tulsi plant also protects against insects including flies, mosquitoes, and other pest. It might also aid in the fight against malarial fever. Kadha is said to be helpful for treating mild diseases such as the common cold and cough. In addition to enhancing your immunity, this kadha will relax your body, lower body temperature, enhance skin quality, strengthen stomach health, and do a lot more. It is also known asIndian basil and is a great source of zinc and vitamin C. Additionally, this contains antiviral, antibacterial, and antifungal effects. Kadha is a traditional beverage with several health advantages. Although it has been used in India for centuries, the corona pandemic 2020 has pushed it to the fore. Improving the immune system of the body is essential to maintaining good health since, as we are all aware, prevention is superior to treatment (10)

II. MATERIALS AND METHODS

A. Sample preparation

- **Raw ingredients:** Tulsi(10gm), ginger(10gm), ashwagandha(7gm), jaggery (100gm), sugar (5ogm).

B. Preparation of kadha tablet

First, a powder mixture made from Ashwagandha, Tulsi leaves and ginger. add two glasses ofwater in a saucepan. When the water is boil must be added sugar and jaggery until a thick sugarsyrup is produced. Add the powder combination to the sugar syrup and cook it for 30 minutes.When the liquid thickens and gets a dark colour, turn the gas off. After the paste has cooled, pour it into a mold to create the Kadha tablets.

ISSN No:-2456-2165

making powder of all the ingredients.

In a saucepan add 2 glass of water and add100gm 0f sugar , 100gm of jaggery until it makes a thin consistency

In this sugar syrup add the mixture of powder and boil it for 30min

Turn off the gas after the mixture turns dark in colour and make a thick paste

After cooling the paste pour it in a mold to make tablet form of kadha

Fig. 2: Illustrates the process for making Kadha tablets.

Fig. 3: Preparation of Kadha Tablet

ISSN No:-2456-2165

C. Proximate Analysis

Proximate analysis describes the quantitative examination of dietary macromolecules. To ascertain, a variety of approaches and procedures are combined. Levels of ash, moisture, protein, pH and fat in the sample. Proximate composition is a most important factor for ensuring the quality of food and food products. The proximate composition of each sample was done by using different method of analysis (12).

D. Determination of Moisture

The oven drying method was used to determine the moisture content. 5gm sample was crushed and dried to a consistent weight in a 100°C oven. The sample was weighed once it had finished cooling in the desiccators. Moisture content was tracked as the weight decrease.

$$\text{Moisture (\%)} = \text{Moisture (\%)} = \frac{W1-W2}{W1} \times 100$$

Where,

W1 = Initial weight of bottle with sample before drying.W2 = Final weight of the sample after drying. **Determination of Fat** The estimate of fat was done using the Soxhlet Extraction Method. Prior to drying it in the oven at 102°C, rinse all glass equipment with petroleum ether, and after removing it, store it in a desiccator. Put 5 grammes of the ground-up, dry material in the thimble after weighing it. In the Soxhlet extractor, put the thimble. Clean a 150 ml round-bottom flask, then fill it with 90 ml of petroleum ether. Set everything up on a heating mantle and let the petroleum ether come to a boil. The extraction procedure should be continued for nearly 6 hours. Allow the sample to cool down before removing the condensing unit from the extraction unit. Finally, all the lipid is eliminated. Following distillation, gather practically all the solvent. After taking the sample from the oven, place it in the desiccator. Take the sample's weight in pounds. Consequently, we obtain a defat sample.

$$\text{Crude Fat (\%)} = \frac{\text{weight of ether soluble material}}{\text{Weight of Sample}} \times 100$$

E. Determination of Ph

The pH metre used should be reproducible to within 0.05 pH units or less and have a minimumaccuracy of 0.1 pH units. For precise results, a uniform. The sample, the standard buffer solutions, and the electrodes should all be kept at the same temperature.

F. Determination of Ash

Muffle Furnace was used to determine the Ash content. Then, 5g of the sample was placed into the oven-dried crucible. By maintaining it in a muffle furnace at 550 C until grey ash forms, ignition is completed. The dish is weighed after cooling in the desiccator. Formula is used to estimate the amount of ash.

$$\text{Ash (\%) (dry basis)} = \frac{M2-M}{M1-M2} \times 100$$

G. Determination of protein

A piece of the sample should be promptly weighed at 1-2 g and transferred to a 500 or 800 mLKjeldahl flask, being careful to ensure that no sample clings to the flask's neck. Add 40mL of concentrated sulfuric acid, 15gm of potassium sulphate, and 0.7 gm of mercury oxide (mercury oxide is added to speed up the breakdown of organic materials during acid digestion). Copper sulphate can be utilized due to environmental and safety issues around the handling and disposal of mercury. This is significant from a safety perspective because during the distillation process, mercury vapours could escape and enter the environment. Additionally, Kjeldahl pills from Missouri, which contain 48.8% sodium sulphate, 48.9% potassium sulphate, and 0.3% copper sulphate.

Calculate protein as = N x 6.25

Protein on dry wt. basis = Protein content 100 − Moisture content × 100

H. Antimicrobial activity

Prepare universal media (nutrient broth and nutrient agar) for the growth of many bacterial species. These cultures were acquired from Babasaheb Bhimrao Ambedkar University's Institute of Food and Nutrition in Lucknow, Uttar Pradesh (India).

I. Agar diffusion method

These may be used for cultivation, upkeep, enrichment, differentiation, tests, and long-term preservation. Medium. The primary function of the agar well diffusion method is to assess theantibacterial activity of plant or microbial extracts (13). Each functional classification has a shelf life and is confined by the formulation. The chemico-physical features of these culture mediums are preserved for as long as possible during their shelf lives. The shelf life of commercially available solid growth media on Petri dishes (agar plates) is normally between 30 and 90 days. The sterilization procedure, storage temperature, light exposure, packing, and medium composition (i.e., general-purpose to specialized formulations) are all significant factors that affect the entire shelf-life and microbiological growth efficiency. Packed agar plates used for drug sensitivity testing, isolation, enrichment, or selection have a varying shelflife, according to a number of studies. parasites, fungi, and bacteria all are example of microorganisms. 12 Different media types withdiffering levels of complexity, stored at 5 °C, and coded for shelf-lives ranging from 3 to 30 days. Packed in shrink-wrap film. After being tested for weight loss (water loss), sterility, pH,and ability to maintain bacterial growth, these media might be awarded shelf life of 90 to 120 days. In all treatments, the development of microorganisms began during the storage interval. After a few days of storage, the growth of microorganisms began, and the number of days of storage increased (14). It is necessary to facilitate the growth and characterization of the target microorganism.ng-term preservation, among other applications.

ISSN No:-2456-2165

J. Total Plate Count Microbial Shelf Life

- Create a dilution series from a sample up to 10-4
- Pipetting 100 l of the chosen dilution series onto the centre of an agar plate's surface.Autoclave the nutritional supply and transfer it sterile tube using aseptic technique.
- To make nutritious agar, mix 1000 ml of nutrient broth with 15 g of agar. To make theagar dissolve, warm the mixture.
- Split the mixture into flasks and autoclave for 15-20 minutes at 15 psi.
- After being autoclaved, cool the nutrient agar medium to 45 °C and dispense it aseptically into Petri dishes and tubes made of sterile materials. Deep tubes, agar plates, and decanters should be ready in case fruit samples are to be added.
- When tilting, leave the tube inclined so the agar can set.
- Bacterial cultures are added to nutrient agar plates, tubes, and nutrient media before being cultured for 24 hours. Note your findings and observations. This investigation was carried out to evaluate the antibacterial epicacy of remedial medicines (15).

K. Antioxidant Activity

Using the techniques of Blosis (1958), the free radical scavenging capacity of the methanol extract kadha tablet was evaluated. Using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) method, the free RSA of the kadha tablet was examined. 100 millilitres of DPPH total were dissolved in 24 milligrams. Methanol is used to make solutions. DPPH solution filtration using methanol.With an absorbance of roughly 0.52 at 517 nm, this mixture is beneficial. 3 ml of DPPH can be stored in a test tube. The easiest technique to assess a sample's antioxidant capacity is to use DPPH (13).

0.2 g of the powdered food sample was placed in a conical flask, 5 ml of 99.9% methanol wasadded, and the flask was then sealed with aluminium foil. Place the sample in a water bath that has been shaken for 2.5 hours at 100 rpm. 2 mg of DPPH was dissolved in 20ml of methanol, and the mixture was then wrapped in aluminium foil and kept chilled. After 2.5 hours of shaking (6000–8000 rpm), the material was put in a centrifuge tube and spun for 15 minutes. Then, the solution was filtered using a flask and funnel with a filter paper put inside the funnel. 1 ml of the extracted solution was pipetted into flasks in portions of 2, 3, 4, and 5 ml before 10 ml of 99 percent methanol was added. The material was then diluted to 1 mL and put into a beaker-sized conical flask. In each ratio, 10 mL of 99 percent methanol were added after 3 mL of DPPH solution. After that, the solution was maintained in a dimly lit area for 30 minutes. Then perform a spectrophotometric analysis and record sample readings (16).

Antioxidant activity percentage is[(Ac- As) ÷ Ac] x 100.

Where: As—Testing specimen absorbance; Ac—Control reaction absorbance

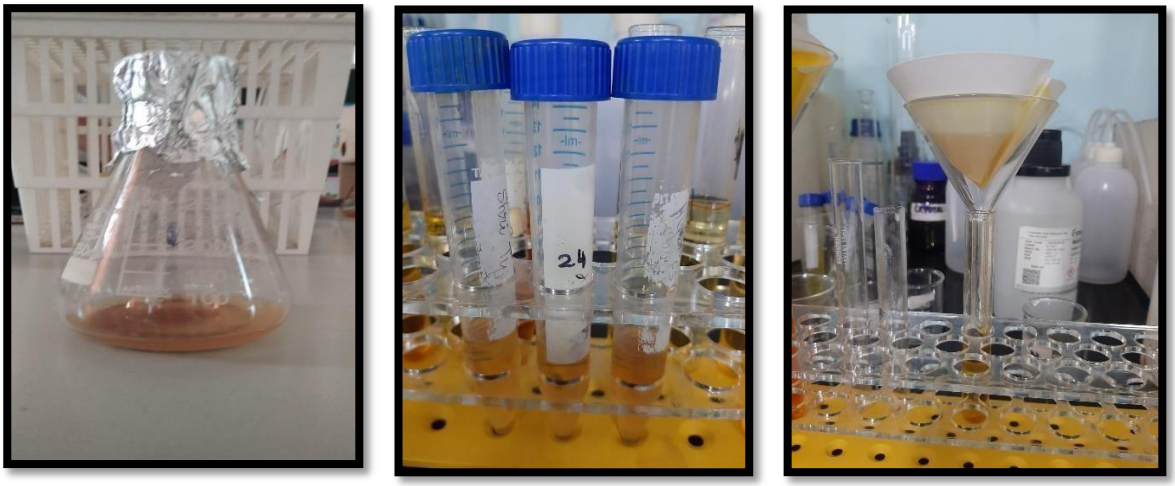


Fig. 4: Antioxidant Estimation

III. RESULTS AND DISSCUSION

A. Proximate analysis of kadha tablet

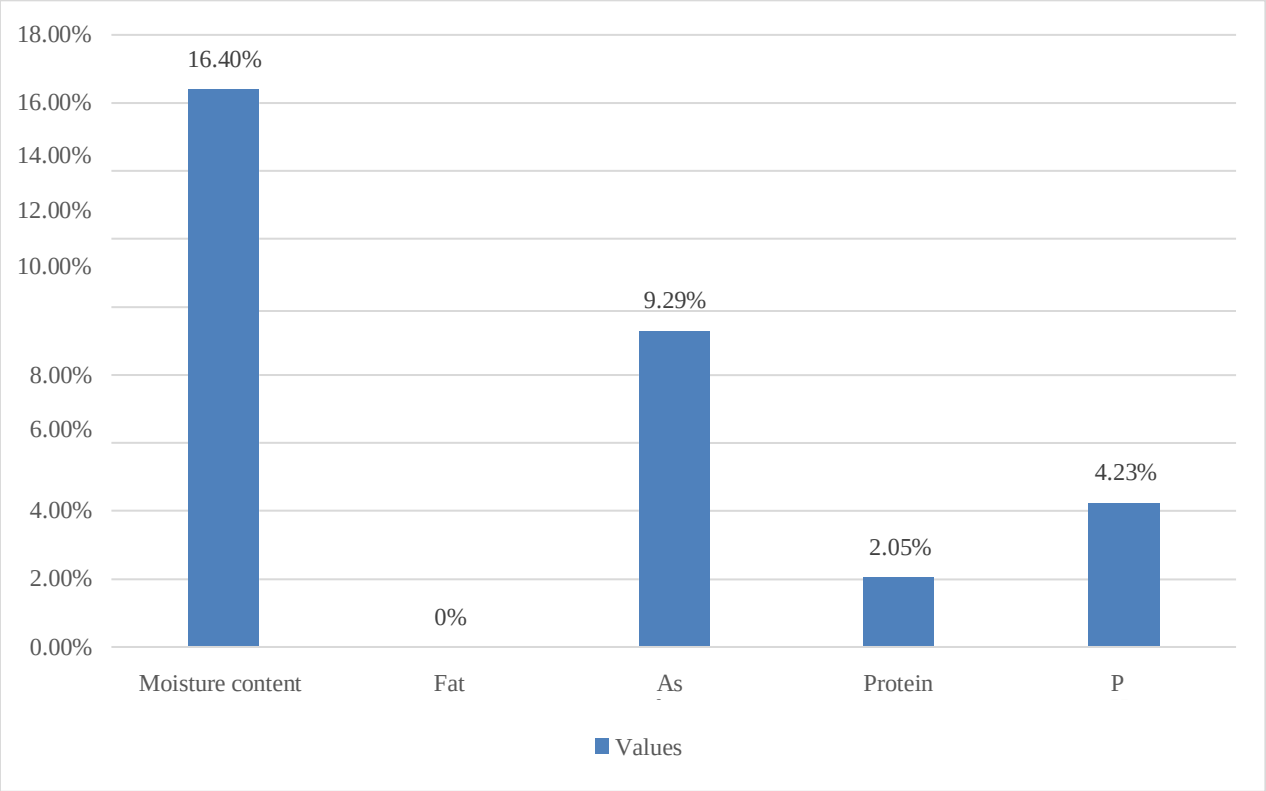
The proximate composition of sample was done by using different method – Moisture content of therapeutic Kadha tablet found to be 16.40%. The ash content representing mineral matter is 9.29%. The protein, body building nutritional component is 2.05g/100g in therapeutic Kadha tablet. In this therapeutic Kadha tablet Fat is almost 0g. pH in therapeutic Kadha tablet is 4.23. The obtained result of sample is also represented in below table.

ISSN No:-2456-2165

Table 1: Proximate composition of kadha tablet

Parameters	Value per(100g)
Moisture content (%)	16.40%
Fat (g)	0%
Ash content (%)	9.29%
Protein (g)	2.05g
pH	4.23

B. Result of Proximate Analysis of sample



Graph 1: proximate analysis

C. Antimicrobial activity

The degree to which microorganisms were susceptible to anti-bacterial agents varied widely. Kadha tablet's microbiological quality changes while being stored After the test, we found various areas of inhibition in the kadha pill in this study. Below in Figure3, the region of inhibition is depicted. The kadha tablet exhibits an average level of microbial growth according to the zones of inhibition of the studied extracts.

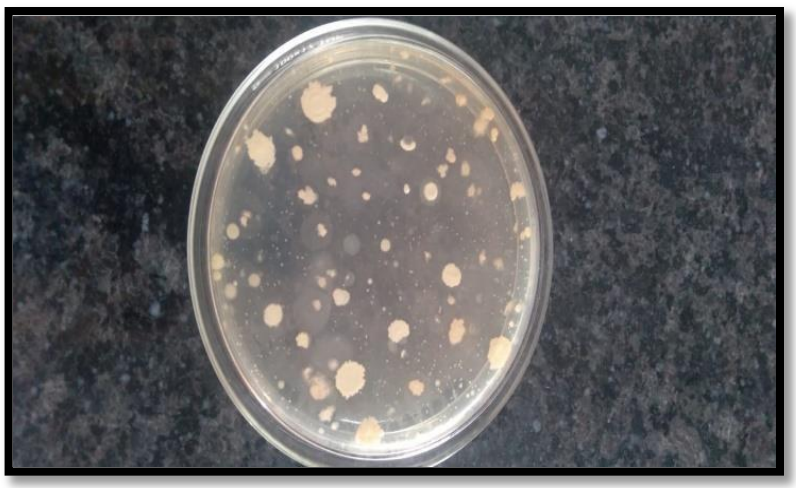


Fig. 5: Antimicrobial activity

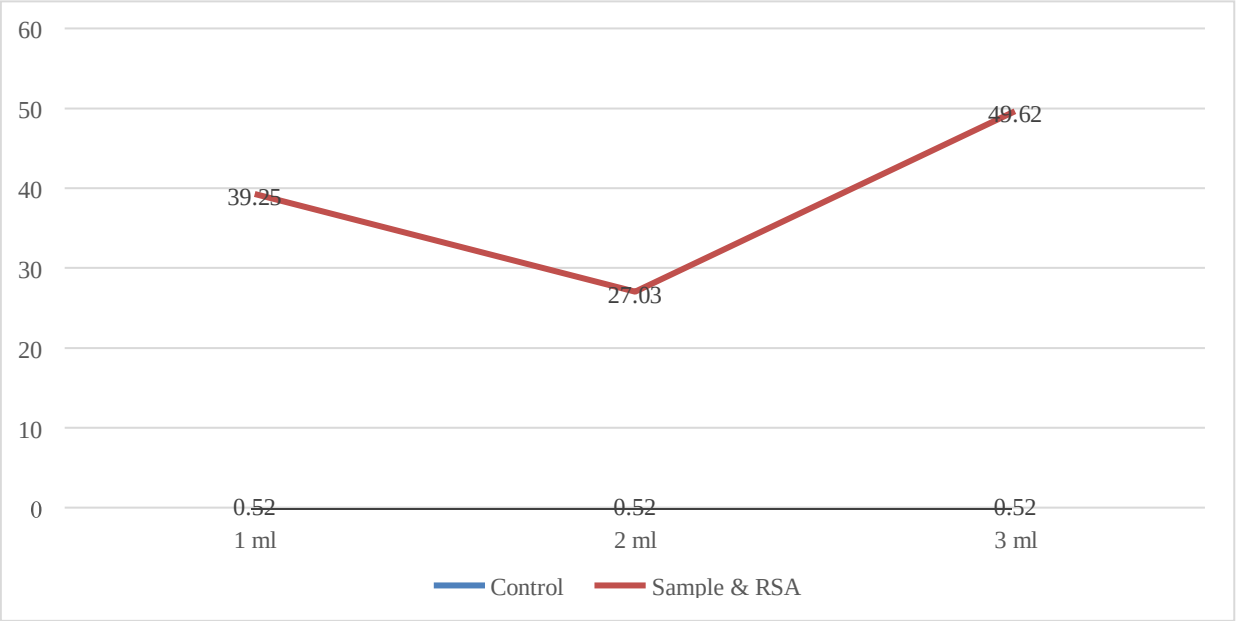
ISSN No:-2456-2165

D. Antioxidant activity

The largest absorption occurs at 517 nm (purple colour) when free-radical DPPH interacts with an odd electron. The reaction between DPPH and a free-radical scavenger antioxidant produces DPPHH, which has a lower absorbance than DPPH due to the lower hydrogen content. This radical form exhibits decolorization (a yellow hue) in comparison to the DPPH-H state as the quantity of electrons gathered rises. this table shows that kadha has high antioxidant property.

Table 2: Concentration of antioxidant activity

Concentration	Control	Sample & RSA%
1ml	0.52	39.25
2ml	0.52	27.03
3ml	0.52	49.62



Graph 2: Representation of antioxidant concentration

IV. CONCLUSION

We draw the conclusion that the usage of spices and herbs may be quite important in the fight against viral infections. Our analysis of the crucial roles that ginger, tulsi, and ashwagandha play in viral infections was confirmed by a few recent research. Since ancient times, people in India have used spices and herbs for their flavor, antiviral, antibacterial, antioxidant, and immunity-boosting characteristics. Since ancient times, Indians have made it a practise to consume these natural items, which have given the population of India immunity, using spices and herbs too frequently can have a few negative effects, including high blood pressure, ulcers in the mouth, constipation, diarrhea, and stomach acidity. The efficiency and mechanism of action of the bioactive chemicals found in common Indian herbs and spices against deadly viruses must be thoroughly studied.

ACKNOWLEDGMENT

Author acknowledges with gratitude a sincere thanks to Prof.Sunita Mishra (Dean &Head of dept. Food&Nutririon) who aided and provided with all possible resources for completing this research work successfully, secondly, I would like to thanks my everyone who helped me a lot throughout the research work.

REFERENCES

[1.] Pradeep, A., Dinesh, M., Govindaraj, A., Vinothkumar, D., & Ramesh Babu, N. G. (2014). Phytochemical analysis of some important medicinal plants. Int J Biol Pharm Res, 5(1), 48- 50.

[2.] Pandey, R., Raj, K., Mondal, G., Mawar, R., Kalra, A., & Singh, H. B. (Eds.). (2023). Compendium of Medicinal and Aromatic Plants Diseases. *Phytopathology*, *71*(4), 537-542.

[3.] Sherly, E. A., Kumar, P., Kumar, P., Tripathi, A., Sengar, P., & Tiwari, S. Role of Five Medicinal Plants (Giloy/Guduchi, Garlic, Tulsi, Turmeric and Ginger) in Human Immune System.

[4.] Verma, S., & Mishra, S. (2021). Preparation of Herbal Products (Brahmi, Ashwagandha and Curcumin) Using Plant Extract to Cure Dementia Patients. Asian Food Science Journal, 20(10), 55-61.

[5.] Varnika, M., & Sunita, M. (2020). Formulation of jowar laddu incorporated with banana peel powder and aswagandha powder. Int J Sci Res Sci Technol, 82-87.

[6.] MISHRA, P., & MISHRA, S. FORTIFICATION OF COOKIES WITH MIRACLE POWDER: ASHWAGANDHA AND MORINGA POWDER.

[7.] Mashhadi, N. S., Ghiasvand, R., Askari, G., Hariri, M., Darvishi, L., & Mofid, M. R. (2013). Anti-

oxidative and anti-inflammatory effects of ginger in health and physical activity: review of current evidence. *International journal of preventive medicine*, *4*(Suppl 1), S36.

[8.] Ansari, A. (2015). Study of plant tulsi and its benefits for human beings. Int J Appl Res, 1(3), 148-51.

[9.] Hanumanthaiah, P., Panari, H., Chebte, A., Haile, A., & Belachew, G. (2020). Tulsi (Ocimum sanctum)–a myriad medicinal plant, secrets behind the innumerable benefits. Arabian Journal of Medicinal and Aromatic Plants, 6(1), 105-127.

[10.] Srivastava, T., & Mishra, S. (2022). Proximate Analysis and Organoleptic Properties of therapeutic Kadha tablet for Immunity Booster. Journal of Ayurveda and Integrated MedicalSciences, 7(6), 99-104.

[11.] Mishra, S., & Parveen, Z. (2021). Morphological and proximate analysis of orange (Citrus scinesis) peel and tomato (Solanum lycopersicum). European Journal of Nutrition & Food Safety, 13(5), 98-105.

[12.] Zia, P., Sunita, M., & Sneha, S. (2021). Extraction of natural colour from beet root (Beta vulgaris) its phytochemical analysis and antibacterial activity. EAS Journal of Nutrition and Food Sciences, 3(4), 80-85.

[13.] Patel, M., Firdaus, M. A., & Mishra, S. (2022). Influence of ZnO and CuO nanoparticle on the shelf life and physiochemical properties of guava (Psidiumguajava) fruits and juice. CyTA-Journal of Food, 20(1), 385-393.

[14.] Chandrappa, P. M., Dupper, A., Tripathi, P., Arroju, R., Sharma, P., & Sulochana, K. (2015). Antimicrobial activity of herbal medicines (tulsi extract, neem extract) and chlorhexidine against Enterococcus faecalis in Endodontics: An in vitro study. Journal of International Society of Preventive & Community Dentistry, 5(Suppl 2), S89.

[15.] Tripathi, S., & Mishra, S. (2021). Antioxidant, antibacterial analysis of pectin isolated from banana peel and its application in edible coating of freshly made mozzarella cheese. Asian Food Science Journal, 20(7), 82-92.

[16.] Prajapati, P. K., & Mishra, S. An analysis of Antioxidant and Anti-Microbial Properties of The Vegetable Chunks.