



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 5, May 2021

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 7.512**

9940 572 462

6381 907 438

[ijirset@gmail.com](mailto:ijirset@gmail.com)

[www.ijirset.com](http://www.ijirset.com)

# Extraction of Oil from Onion (*Allium cepa*) by using Solvent

Dr.D.Sivakumar<sup>1</sup>, S.Nisha sri<sup>2</sup>, M.Saranya<sup>3</sup>, S.Sharmila<sup>4</sup>

Head of the Department, Department of Agricultural Engineering, Kalasalingam Academy of Research and Education, Krishnankoil, Tamil Nadu, India<sup>1</sup>.

U.G. Student, Department of Agricultural Engineering, Kalasalingam Academy of Research and Education, Krishnankoil, Tamil Nadu, India<sup>2</sup>.

U.G. Student, Department of Agricultural Engineering, Kalasalingam Academy of Research and Education, Krishnankoil, Tamil Nadu, India<sup>3</sup>.

U.G. Student, Department of Agricultural Engineering, Kalasalingam Academy of Research and Education, Krishnankoil, Tamil Nadu, India<sup>4</sup>.

**ABSTRACT:** Different kinds of illnesses are an growing quantity of affecting human beings that stay in today's fairly pressurized society and these illnesses are a great deal much less responsive to treatment with usual medicines. Onion is acknowledged to be relatively medicinal, which is the purpose why it is used as the fine vegetable in preparation/garnishing of dishes and remedy of ailments. This lookup covers the extraction of essential oil from onion characterization of the imperative oil, and preservative measures for financial utilization. Soxhlet Extraction manner used to be used to extract the oil. Onion was once once gathered and used for the search for work. There are two strategies was once as soon as located in this mission work. They are extract onion oil with the resource of Hexane at unique thickness. Th e Aim of the challenge is to evaluate the effectivity of the onion oil by way of hexane at exclusive thickness.

**KEYWORDS:** Production, critical oil, onion

## I. INTRODUCTION

New varieties of ailment are increasingly more affecting human beings that stay in today's incredibly pressurized society and these illnesses are less responsive to cure with traditional medicines. Many humans who have been dissatisfied with mainstream remedy have grew to become to complementary treatment plans which do now not count number on scientific proof however as an alternative on historic and observational evidence. Modern lookup has mostly tested the ordinary makes use of related to the therapeutic functions of positive flowers. Onions are essentially a team of modified leaves of the onion plant that are situated on a notably quick stem base. Besides the onion itself, any other one of the beneficial components of the plant are the stems which have a tendency to be very tasty and really useful to one's fitness particularly if they are fed on when they are gentle and young. New kinds of health problem are greater and extra affecting human beings that remain in today's incredibly pressurized society and these illnesses are a good deal much less responsive to remedy with normal medicines. Many human beings who have been disenchanted with mainstream medicinal drug have grew to become to complementary recovery processes which do now no longer have in mind on scientific proof then again then again on ancient and observational evidence. Modern look up has normally validated the normal makes use of associated to the therapeutic functions of effective vegetation.

## II. MATERIALS AND EQUIPMENTS

The following components and equipment had been used even as carrying out this lookup work, such as: crimson onion, knife, mixie, measuring flask, funnel, tray dryer, weighing machine, soxhlet distillation tools mechanism of quintessential oil extraction, Hexane and ethanol are the two solvents used for extraction of onion oil.



### III. METHODOLOGY

#### Sample Collection

The onion (*Allium cepa*) used to be bought from vegetable backyard market, and then transported to the branch of meals science laboratory, of kalasalingam academy of lookup and schooling for analysis. 1 kg of every range of purple onion was once purchases from the market. After processing, 100g used to be virtually used similarly extraction of the vital for the range of the pink onion.

#### Drying

Drying is a mass swap technique consisting of the removing of water or any different solvent by means of the usage of evaporation from a solid, semi-solid or liquid. This approach is regularly used as a final manufacturing step before than advertising or packaging products.

#### Principle of drying

There are four principle to proper drying the sample, Removal of standing water, Evaporation via air movement, Dehumidification and Temperature control.

#### Drying characteristics

In our mission we took the three extraordinary thickness of onion.

Sample 1 slice thickness :0.5 cm

Sample two slice thickness :1 cm

Sample three slice thickness :2cm

Drying temperature :60°C

Duration :30 minutes

#### Grinding

Grinding is a method of foods processing the location big chunks or particles of foods are minimize into great parts or bits.

Grinding strategies have been evaluated aiming to figure out yield and composition of imperative oils (EOs) from *Baccharis articulata* (Lam) Pers., recognised as *carqueja*, a native plant from South Brazil. Cryogenic, knife (with and barring cooling) and ball mills had been used. The foremost components placed in EOs have been  $\beta$ -pinene, caryophyllene, spathulenol and caryophyllene oxide, however editions in 21 compounds had been observed. All grinding tactics lowered monoterpenes and oxygenated sesquiterpenes with consciousness of hydrocarbon sesquiterpenes. The sesquiterpenes (hydrocarbons and oxygenated) had been positioned from 63.55 to 86.02% even as the monoterpene hydrocarbons' interest ranged from 13.98 to 36.45%

### IV. EXPERIMENTAL RESULTS

#### Experimental Set-Up

The take a look at used to be carried out the utilization of a soxhlet distillation tools method. soxhlet distillation is the most famous strategy used to extract the oil when the desired compound has a constrained solubility in a solvent. It lets in for unmonitored and unmanaged operation while efficiently recycling a small volume of solvent to dissolve a massive extent of material.

In this extraction, a small volume of dry sample is located in a thimble, which is located in a distillation flask containing the solvent of particular interest.

#### Soxhlet extraction.

Soxhlet extraction is one of the most frequent techniques nevertheless being used for the separation of a wide range of volatile compounds to oils from secure samples. In mid nineteenth century, Baron Von Soxhlet has added this method, after whom the strategy is named. Soxhlet extraction is a popular method and is being considered as a reference for endless cutting-edge contemporary extraction techniques.

Figure suggests the set up of a common Soxhlet apparatus, greater regularly than no longer consists of a spherical bottom flask, a thimble holder and a condenser.

Figure Soxhlet extraction tools set up. Operation is very convenient and at first, the Soxhlet thimble is loaded with a cellulosic pack of oleaginous material.

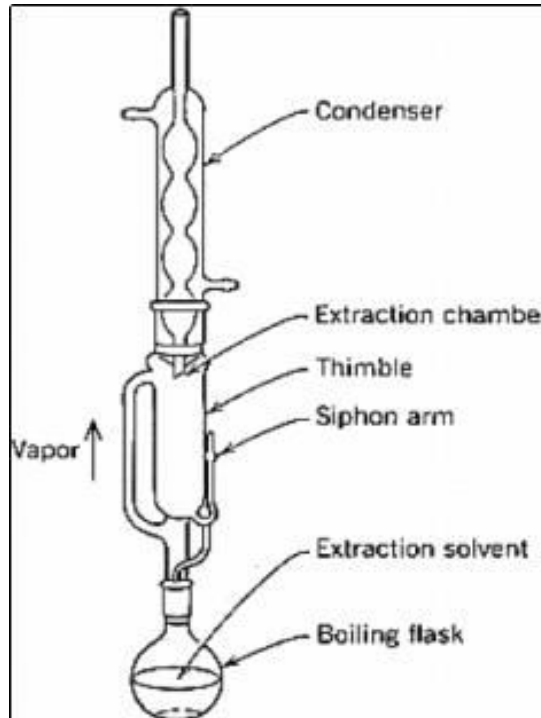


Figure 1 : Soxhlet apparatus

Extraction solvents are used as man or woman or mixture of solvents; hexane, ethanol [34], chloroform and methanol, hexane and methanol [35], terpene [36], 2- propanol, chloroform, toluene [37]. Most many instances hexane is used for oil extraction, delivered to the flask and the flask is heated slowly to the boiling thing of the solvent so that the solvent vaporizes. Soxhlet extraction is based totally absolutely on the principle that, the vaporized solvent passes with the aid of the side arm, condenses at the condenser and floods in to the thimble. When the pretty heat solvent interacts with the oil furnish in the thimble, extraction of analyte (oil, lipid, fat or phytochemicals) takes place and the solvent with analyte drains as soon as greater in to the flask through the siphon device. Repetitions of the cycle will give up end result in whole extraction of the analyte. Analyte receives accumulated at the bottom of the flask, as it has larger boiling aspect than the extraction solvent. Consequently, at each cycle material being extracted will have interaction with easy solvent. Soxhlet extraction is a gradual technique and requires in addition separation of solvent to get analyte, an electrical energy intensive process. The gorgeous hazards associated with Soxhlet extraction are, preference of solvent, longer size of extraction and massive quantity of solvent consumption. Even even even though being a reference method, in modern day days, with the prevalence of current day extraction techniques, Soxhlet extraction is turning into an old skool extraction techniques.

### End product analysis

The necessities oil are bought from the onion via the use of solvent. By evaluating specific thickness, we received a higher end result from hexane it is exceedingly high-quality to extract the greater oil at two cm thickness sample.

Finalised the end result of drying samples after grinding are:

S.NO	Sample(cm)	Gram	ml
1	0.5	9	3
2	1	14	5
3	2	12	8



Figure 1: Oil extracted from Sample I



Figure 2: Oil extracted from Sample II



Figure 3: Oil extracted from Sample III



Usage and utility :

One of the high-quality investigated outcomes of onion is its antiasthmatic activity, which is attributed to its anti-inflammatory activity (Rabinowitch and Currah, 2002). A approach of treating or stopping human viral contamination by way of eating dehydrated onion fabric was once claimed additionally in a patent (Goren et al., 2002).

The bioactive houses and traits flavour of onion have been attributed to sulfur containing compounds, which are the most important components of its crucial oil. One technique of manufacturing of onion oil is steam distillation of overwhelmed onion bulbs (Hosoda et al., 2003). The water insoluble extractive received is a darkish yellow or brownish yellow liquid with an severe flavor. It consists of a complicated combination of risky sulfur compound, mostly mono-di-tri- and tetra sulphides with special alkyl groups (Hosoda et al., 2003).

#### V. CONCLUSION

The odour and flavour homes of onion oil are used in the ingredients organisation to add ordinary flavours in novel foods. Onion oil can stabilize free radicals and act as an anti rancidity agent in foods systems. The sulfur compounds in onion oil can inhibit enzymatic browning in glowing produce. Onion oil possesses anti bacterial exercise toward foods pathogens and spoilage bacteria. Yeast and mildew make bigger and mycotoxin biosynthesis can be inhibited via way of onion oil.

#### REFERENCES

- [1] Marino, Nick (July 22, 2009). "Six Insights From an Editor at The Onion". Paste Magazine. Retrieved July 24, 2016.
- [2] Jump up to:<sup>a b</sup> "Contact The Onion". The Onion. June 16, 2016. Archived from the original on June 16, 2016. Retrieved June 22, 2016.
- [3] "Onion Labs". Archived from the original on March 31, 2013. Retrieved December 30, 2012.
- [4] Jump up to:<sup>a b c</sup> Manjoo, Farhad (September 5, 2013). "A Disturbance in the Force". Slate. Retrieved December 13, 2013.
- [5] Onion, The. "Rotation Of Earth Plunges Entire North American Continent Into Darkness". The Onion. Retrieved August 1, 2018.
- [6] Dionne, Alexandria (January 8, 1999). "The Onion moves to the Internet". Entertainment Weekly. Retrieved June 24, 2015.
- [7] "Wow. Clickhole". Slate. June 9, 2015.
- [8] "Cards Against Humanity Bought Clickhole". BuzzFeed News. Retrieved February 19, 2020.
- [9] "Layers of the Onion". The Spectator. February 8, 2007. Retrieved June 20, 2015.
- [10] Jump up to:<sup>a b c</sup> An interview with The Onion, David Shankbone, Wikinews, November 24, 2007.



**INNO**  **SPACE**  
SJIF Scientific Journal Impact Factor

**Impact Factor:  
7.512**

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
**INDIA**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details