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Extraction of *Basil, Padina, Ajwain* and Development of Oxygen Garden in the School Yard as a Preventive Measure for Covid-19

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Abstract: ***According to phyto-chemical composition of basil viz. 1. Rama tulsi (ocimum sanctum), 2. Krishna tulsi (ocimum tenuiflorum), 3. Amrita tulsi (ocimum tenuiflorum), 4. Vana tulsi (ocimum gratissum), pudina (Mint), Ajwan(trachyspermum ammi) are very much useful in the prevention of covid-19 pandemic, basil botanical species viz. (ocimum sanctum, ocimum tenuiflorum, Amrita tulsi, ocimum gratissum also release oxygen 20 hours, 4 hours ozone by the absorption of carbon dioxide, carbon monoxide and oxide of sulphure. Ocimum sanctum (OS) has many medicinal properties like antioxidant, antidiabetic, antiulcer, anticancer, antibacterial, antifungal and other. The phytochemicals compounds of Ocimum, alkaloids, flavonoids, phenolics, essential oils, tannins and saponins play an important role in herbal medicine. Ocimum species have been found to contain many medicinally relevant properties including anti-cancer, antioxidant, antifungal and anti-inflammatory virtues, and are also recommended for the treatment of malaria, bronchitis, diarrhea, dysentery, fever, pneumonia etc. Whereas mint species originally used as a medicinal herb to treat stomach-aches and chest pains, and it is commonly used in the form of tea as a home remedy to stimulate digestion; alleviate stomach pain; and treat biliary disorders, dyspepsia, enteritis, flatulence, gastritis, gastric acidities, aerophagia, intestinal colic. It is also used as an environmentally friendly insecticide for its ability to kill some common pests such as wasps, hornets, ants, and cockroaches.***
Ajwan extract or its oil has a fungicidal, antimicrobial and anti-aggregatory effects on humans. Ajwain has a traditional potential herb and is widely used for curing various diseases in humans and animals. The fruit possesses stimulant, antispasmodic and carminative properties. It is an important remedial agent for flatulence, atonic dyspepsia and diarrhea. The seed of ajwain is bitter, pungent and it acts as anthelmintic, carminative, laxative, and stomachic. It also cures abdominal tumors, abdominal pains and piles. Seeds contain an essential oil containing about 50% thymol which is a strong germicide, anti-spasmodic and fungicide. Thymol is also used in toothpaste and perfumery.
Keywords: Extraction, application, oxygen, preventive covid-19, yard garden

I. INTRODUCTION

Basil is one of the most valued and devoted herbs, it is a perennial, aromatic, culinary, herbaceous bush type plant which has approx 60 variety identified and categorized under Ocimum genus in plant family lamiaceae. It is good source of vitamin A, Vitamin C, Calcium, Zinc, Iron, Chlorophyll and it posses anti bacterial, insecticidal properties, its leaves have capabilities to purify contaminated water. Scientific studies present evidences for its anti-inflammatory, antioxidant, analgesic (pain-reducer), antipyretic (fever-reducer), hepato-protective (liver-protector) cancer-fighter, diabetes-preventer, blood vessel-protector, de-stresser, immune-booster etc properties. A several types of basil are cultivated, in different parts of the world; some of the widely used varieties can be categorized in two groups–holy basil (ocimum sanctum) and mediterranean basil (ocimum basilicum).

A. Holy Basil

It is known as Tulsi and is the most revered traditional house plant in India it is associated with ayurveda and Hindu religion as goddess of wealth, health and prosperity. These plants have strong medicinal properties compared to second group species. There are several varieties popular based on the regional religious beliefs which are known by a several vernacular and common names such as in Sanskrit it is named as Rama Tulsi and Krishna Tulsi, in Malayalam it is called Trittavu, in Marathi as Tulshi, Tulasi in Tamil, Thulsi in Telugu and Holy Basil in English. Not to be confused with Ocimum Tenuiflorum, it is a synonym for Ocimum Sanctum. There are 4 species popular of Holy basil are 1. Rama tulsi (ocimum sanctum) 2. Krishna tulsi (ocimum tenuiflorum) 3. Amrita tulsi (ocimum tenuiflorum) 4. Vana tulsi (ocimum gratissum), for the study these basil species are selected on the basis of its medicinal importance and most widely availability in the region.

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B. Mediterranean Basil

It is known as Sweet basil and is the most popular variety of basil which is found all over the world including Asia, Europe, America and Africa. It is most consumed herb worldwide and known by several common names such as king of herbs, royal herb, great basil and Saint-Joseph's-wort etc, it is used in culinary preparations and used in several types of popular cuisines like Italian, Thai etc. 5. Sweet basil (ocimum basilicum) 6. Thai basil (ocimum thyrsiflora) 7. Purple basil (ocimum basilicum) 8. Lemon basil (ocimum citriodorum) 9. Vietnamese basil (ocimum cinnamon) 10. American basil (ocimum americanum) 11. African blue basil (ocimum kilimandscharicum) 12. Italian genovese basil (ocimum basilicum) 13. Lettuce basil 14. Green ruffles basil 15. Cardinal basil 16. Greek basil 17. Spicy globe basil 18. Summer long basil

1) *Rama Tulsi (Ocimum Sanctum):* The plant has pure green leaves and better tolerance to winters; sun light, plant requires more watering and fertilization than the other varieties. The Queen of herbs is one of the most worshiped aromatic herbs that are found at almost every house in India. Location–Outdoors, Light–Full Sun, Watering–Daily, except winters, Temperature–Loves range 15 to 40 degree Celsius, Common names – Ram Tulsi, Botanical name – Osmium Sanctum.
2) *Krishna Tulsi (Ocimum Tenuiflorum):* The plant has purple fringed leaves and purple stems with pungent and strong test of leaves; it has more medicinal properties than the other species. Below are its growing habits: Location–Outdoors, Light–Full Sun light, Watering–Daily, except winters, Temperature – Loves range 20 to 45 degree Celsius, Common names – Krishna Tulsi, Botanical name – Ocimum tenuiflorum.
3) *Amrita Tulsi (Ocimum Tenuiflorum):* The plant is less commonly grown perennial, aromatic and sacred species of holy basil in India. Below are its growing habits: Location – Outdoors, Light–Full Sun, Watering–Daily, except winters, Temperature – Loves range 15 to 40 degree celsius Commonnames – Amrita Tulsi, Botanical name – Ocimum tenuiflorum.
4) *Vana Tulsi (Ocimum Gratissum):* It is woody type perennial, aromatic and sacred species of holy basil in India. Below are its growing habits: Location–Outdoors, Light–Full Sun, Watering–Daily, except winters, Temperature–Loves range 15 to 40 degree celsius, Common names–Vana Tulsi, Botanical name–Ocimum gratissum.
5) *Pudina Plant (Mint/Mentha):* The species that makes up the genus Mentha are widely distributed and can be found in many environments. Most grow best in wet environments and moist soils. Mints will grow 10–120 cm tall and can spread over an indeterminate area. Due to their tendency to spread unchecked, some mints are considered. Mints are aromatic, almost exclusively perennial herbs. They have wide-spreading underground and over ground stolons and erect, square, branched stems. The leaves are arranged in opposite pairs, from oblong to lanceolate, often downy, and with a serrated margin. Leaf colors range from dark green and gray-green to purple, blue, and sometimes pale yellow. The flowers are white to purple and produced in false whorls called verticillasters. The corolla is two-lipped with four subequal lobes, the upper lobe usually the largest.
6) *Trachyspermum AMMI (AJWAIN):* Trachyspermum ammi is a native of Egypt and is cultivated in Iraq, Iran, Afghanistan, Pakistan, and India. In India, it is cultivated in Madhya Pradesh, Uttarpardesh, Gujarat, Rajasthan, Maharashtra, Bihar and West Bengal. Trachyspermum ammi L. belonging to family Apiaceae is a highly valued medicinally important seed spice. The roots are diuretic in nature and the seeds possess excellent aphrodisiac properties. The seeds contain 2–4.4% brown colored oil known as ajwain oil. The main component of this oil is thymol, which is used in the treatment of gastro-intestinal ailments, lack of appetite and bronchial problems. The oil exhibits fungicidal, antimicrobial and anti-aggregatory effects on humans. Ajwain is a traditional potential herb and is widely used for curing various diseases in humans and animals. The fruit possesses stimulant, antispasmodic and carminative properties. It is an important remedial agent for flatulence, atonic dyspepsia and diarrhea. The seed of ajwain is bitter, pungent and it acts as anthelmintic, carminative, laxative, and stomachic. It also cures abdominal tumors, abdominal pains and piles. Seeds contain an essential oil containing about 50% thymol which is a strong germicide, anti-spasmodic and fungicide. Thymol is also used in toothpaste and perfumery.

II. MATERIALS AND METHODS.

A. Preparation Of Compost

Sixty mud vessels are purchased from the market having hole at the centre of the vessel for the water drainage. Compost is prepared from house hold waste which is generated after its segregation. The separated wet kitchen waste placed in 200 litre capacity plastic drum having number of holes and sprayed 100liter waste decomposer liquid on it every 15 days interval for the fast decomposition after 45-50 days we get fine compost at home.

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B. Preparation of bed in mud vessel:

A black soil having weight 200kg is mixed with 100kg compost homogeneously for the preparation of bed, add approximately 5kg mixture in each mud vessel and supply appropriate amount of water and placed the above mentioned botanical species at the centre of the mud vessel in following mentioned quantity for the development of oxygen park.

C. Maitenance Of Plant

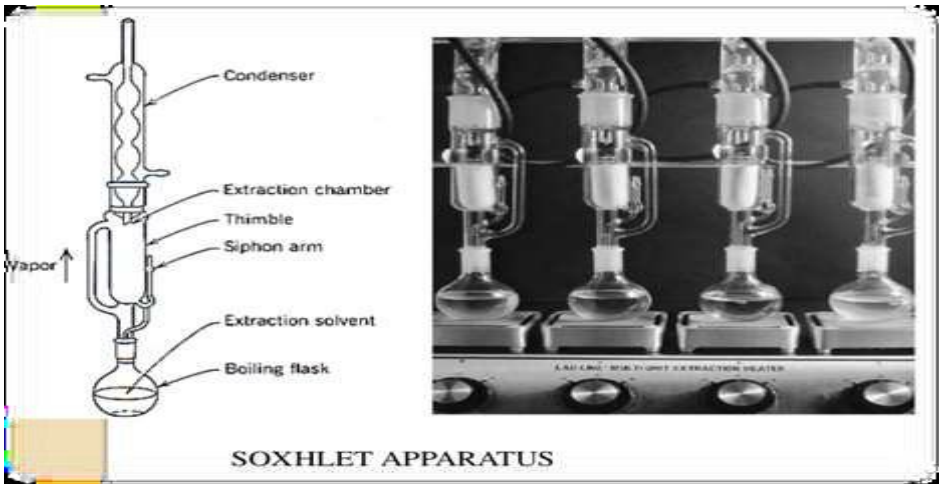
Supply water to every plant every two day interval for its vegetative growth and also spray plant growth regulator, every 20 days interval.

D. Extraction of basil, MINT, AJWAN Liquid

After 90 to 100 days pick up the leaves of ram tulsi approximately 3-4kg and put it into a Hot Continuous Extraction (Soxhlet), apparatus which is as shown bellow placed 2 litre distilled water as a solvent. The extracting solvent in flask is heated, and its vapors condense in condenser. The condensed extractant drips into the thimble containing the crude drug & extracts it by contact. When the level of liquid in chamber rises to the top of siphon tube, the liquid contents of chamber siphon into flask. This process is continuous and is carried out until a drop of solvent from the siphon tube does not leave residue when evaporated. Similarly all different types of basil, mint and Ajwan were extracted which are very much useful as a preventive measure of covid-19.

TABLE I
TYPES OF BOTONICAL SPECIES & BUDGET

Sr. no	Name of botanical species	Number/ quantity	Estimated cost
1	Rama tulsi (ocimum sanctum)	10	Rs 100/-
2	Krishna tulsi (ocimum tenuiflorum)	10	Rs 100/-
3	Amrita tulsi (ocimum tenuiflorum)	10	Rs 100/-
4	Vana tulsi (ocimum gratissum)	10	Rs 100/-
5	Pudina plant	10	Rs 100/-
6	Trachyspermum ammi (AJWAN)	10	Rs 100/-
9	Mud pot/ vessel (big size)	60	Rs 6000/-
11	Compost	100kg	Rs 2000/-
12	Plant growth regulator	2 liter	Rs 1000
13	Spraying pump	15 liter capacity	Rs 4500/-
Total expenditure-14,100/-			



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III.CONCLUSIONS

It gives out oxygen for 20 of the 24 hours in a day as well as ozone for 4 hours a day. 'Tulsi' also absorbs harmful gases like carbon monoxide, carbon dioxide and Sulphure dioxide. 'Tulsi' plant at home, believes that it has a healing effect on the mind. Plants produce 22 liter oxygen for every 150 g of growth.

Aqueous medium extract of basil, mint and Ajwan liquid is used as a preventive measures for the covid-19 i.e. corona virus.

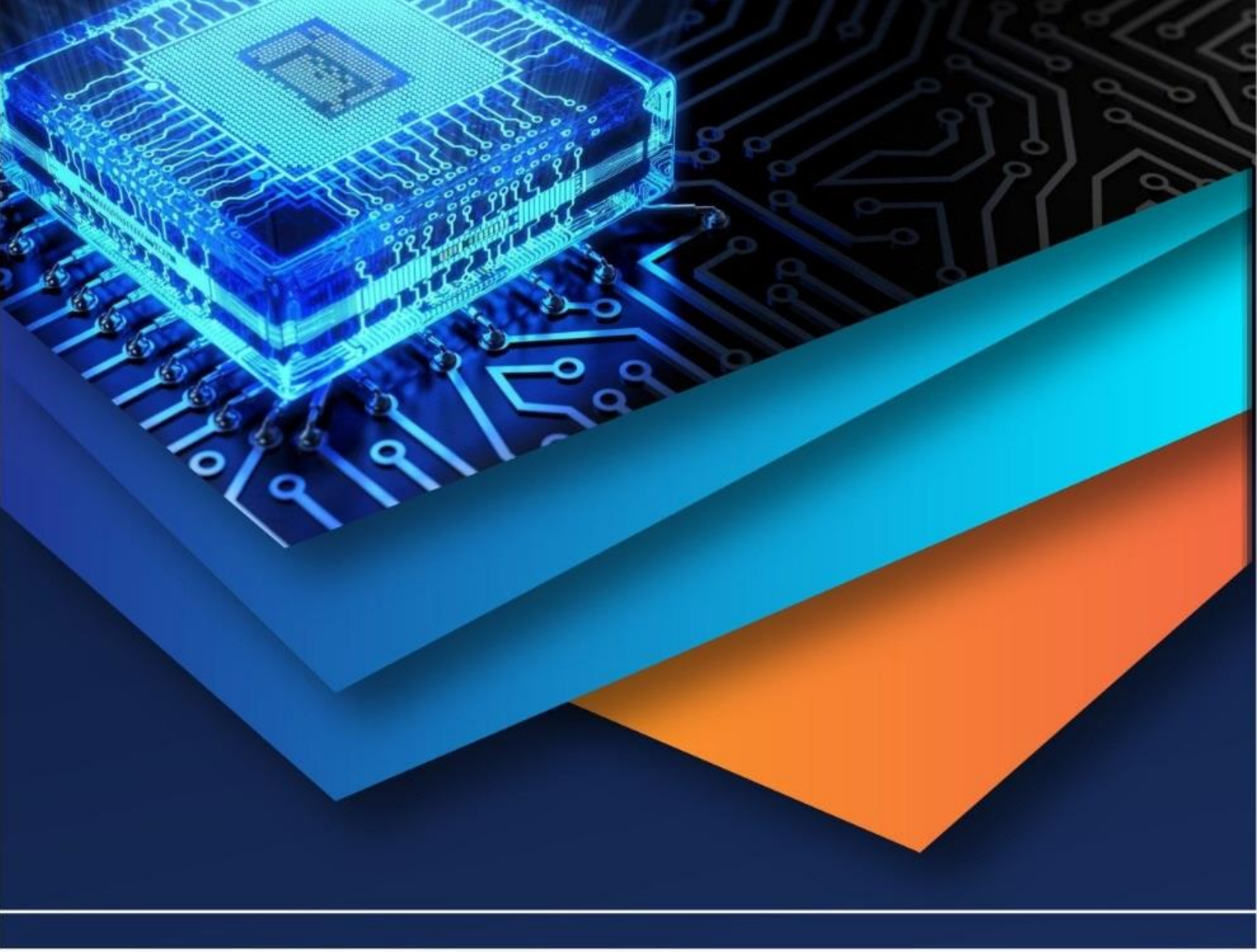
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