

Environment Friend Herbal Based Business for Empower of Woman– A Stick Formation

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Abstract: The present dissertation explores the development of eco-friendly, antimicrobial herbal incense sticks using floral waste and natural ingredients as a sustainable alternative to conventional, chemically processed incense products. India generates massive quantities of floral waste, particularly from religious offerings, most of which ends up polluting water bodies and landfills. Simultaneously, traditional incense sticks, while culturally significant, often contain harmful chemicals contributing to indoor air pollution. This study presents an innovative, environment-friendly approach by repurposing discarded flowers combined with ingredients such as guggul, loban, clove, sawdust, charcoal, and natural binders like honey and ghee. The formulation avoids synthetic adhesives, thus aligning with the goals of health safety, environmental conservation, and green entrepreneurship. The resulting incense sticks are non-toxic, biodegradable, and culturally respectful, offering potential for women's empowerment through small-scale, home-based businesses. This work highlights the viability of waste-to-wealth conversion and supports sustainable development goals by promoting responsible consumption, environmental health, and rural livelihood generation.

Keywords: Eco-Friendly Incense Sticks, Floral Waste Management, Herbal Formulation, Antimicrobial Incense, Sustainable Product Development, Women Empowerment.

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I. INTRODUCTION

Incense sticks are long, cylindrical structure, having a bamboo core coated with fragrant materials, which, on burning, fills the atmosphere with fresh air and aroma (Lin et al., 2008). Incense sticks are used for many religious purpose, in order to purify the bad air and fills positive energy in the atmospheres and eliminates negative energy from our surroundings (Jetter et al., 2002).

Incense stick, a globally traded product, is burned for fragrance. It is known as Agarbatti in India and Dhup-kathi locally. Incense sticks are traditionally used for worship, meditation, prayer, ceremonies and ritual purification. These are also used as air fresheners, mosquito repellent and for creation of ambience and aromatherapy (Dutta, 2006). The incense sticks in India are prepared either by conventional process at home or alternatively, by using large machines in the industries. In India, incense sticks manufacturing is included as a sub-class of cottage industries that engages mainly women's of rural area (Hazarika et al., 2018).

Evolution of incense and incense sticks in world throughout the ancient century, the emergence of the incense

sticks could be attributed to the burning of aromatic wood. Since achieved by mankind these fragrant incense sticks played a vital role in regular rituals and became more religious. In most of the popular world's religions, incense has performed a key role. The ancient religions linked the natural world with their gods. It was claimed that fragrant plant materials forced demons away and allowed the gods to come on the earth; they also had the realistic application of exiling unpleasant smell. The Old Testament, the Vedas, and several other ancient books document the consumption of incense sticks. During celebrations, ceremonies, and several everyday rituals in which it is said to worship ancestors, the Hindu, Buddhist, Taoist, and Shinto religions everyone use incense. (Journal of Bio Innovation

At present total production of flowers in our country is 2785000 metric ton. Growing at a compound annual growth rate (CAGR) of floriculture market of 20.1% during 2019-2024 (Sharma, 2021). Therefore, India's production of floral waste will increase in the future. The large-scale consumption of flowers during religious festival carried out throughout the country. Every day around 0.5 M people go to temples and offer flowers. As per estimates, 800 MT of flowers are offered at various mosques, Gurudwaras, and temples in the

country. More than 8 MT of flowers are dumped in the water body every year, along with toxic insecticides and pesticides used in their cultivation. There are so many places of worship in India that generate 20 T of flower waste every day (Sharma, 2021).

II. MATERIAL AND METHODOLOGY

➤ *The Experiment Conducted in Maharishi University of Information Technology, Lucknow, Following Materials are Required to Complete The Process:-*

- Flower
- Charcoal
- Sawdust
- Fragrant
- Guggul
- Lohban
- Clarify butter
- Honey
- Clove
- Hawan samagri

➤ *Collection of Flower Sample:*

The flowers collected from different temples of Lucknow (U.P.), remove unnecessary things from it, select only flower petals for making flower powder. (Dry the flower petals properly in the dark place and in oven to protect their essence and then grind it to make powder.)

Flower used in incense can have a variety of properties, including mood enhancement, relaxation and improve sleep.

➤ *Other Ingredients*

• Charcoal

The wood becoming black on burning is crushed to the required mesh and used as a filler for incense stick. Dry wood is cut into pieces and put in kiln like structure and fired from below and the entire layer is covered by mud. After formation of charcoal, it sent to the crushing units. Sawdust are tiny particles of wood that are formed from sawing or sanding wood. It was collected from the factory producing wooden furniture and then cleaned and finely sieved for equal particle size. Fine saw dust particles were used.

• Sawdust

Sawdust are tiny particles of wood that are formed from sawing or sanding wood. It was collected from the factory producing wooden furniture and then cleaned and finely sieved for equal particle size. Fine saw dust particles were use.

• Fragrant:

Fragrances are aromas that are selling point of incense. There is no such choice here we can use any fragrances like woody, fruity, floral, leafy or resinous. We can also use Halmadii and many other fragrances. Fragrance creates soulful atmosphere and mindfulness.

• Guggul:

Guggul resin, derived from the Commiphora wightii tree, is commonly used in incense, particularly in India, for its warm, earthy, and slightly sweet aroma, believed to promote relaxation, purification, and spiritual well-being.

• Lohban

"Loban" in English refers to gum benzoin or benzoin resin, a fragrant balsamic resin used in incense and perfumery, and is also a generic term for frankincense-type incense. Its calming, purifying, and spiritual properties, creating a serene atmosphere and aiding in meditation and prayer.

• Clarify butter

Ghee, a clarified butter, is used in incense, particularly in Hindu traditions, as a sacred ingredient in rituals and ceremonies, believed to purify the environment and promote spiritual well-being.

• Honey

Honey can be used in incense making as a binder, a preservative, and to enhance the scent. It helps to bind the incense ingredients together into a workable dough, ensuring even burning. Additionally, it can add a sweet, pleasant aroma to the incense. Some incense recipes also use honey as a preservative, helping to extend the shelf life of the product.

• Clove

Cloves are commonly used in incense making for their distinct, warm, and spicy aroma. They are often ground into a fine powder and incorporated into the incense blend, either as a primary fragrance component or to enhance the scent profile of other ingredients

➤ *Hawan samagri*

Havan Samagri, a blend of herbs and other natural ingredients, is primarily used in Hindu rituals to purify the environment, create a positive atmosphere, and invoke divine blessings. Burning it during a havan (fire ritual) is believed to cleanse negative energy, remove impurities, and enhance spiritual experience.

III. PROCESS OF MAKING INCENSE

- Step:1 Collection of Material
- Step:2 Shaping
- Step:3 Drying
- Step:4 Benefits of flower insence
- Step:5 Safety precaution

➤ *Step: 1 Collection of Material*

Before starting the production of incense, gather the following material:

• Dried Herbs and Flowers:

Choose fragrant herbs like guggul, lohban, marigold flower, rose flower to enhance the aroma.

• Natural Binding Agent:

Use natural adhesive substances like ghee.

- **Mixing Bowl:**
To mix the ingredients thoroughly.

- **Measuring Cups and Spoons:**
For precise measurements.

- **Molds or Shaping Tools:**
These will help in shaping the dhoop sticks.

- **Newspaper or Drying Racks:**
To dry the sticks.

➤ **Step: 2 Mixing the Ingredient**

In this step, we will mix the flower, herbs and the natural binding agent was done with the following instruction:-

- Add the desired herbs and flowers, finely ground or in powder form.
- Gradually introduce the natural binding agent, such as ghee or jaggery, to the mixture.
- Mix all the ingredients thoroughly until they form a uniform and pliable dough-like consistency.

➤ **Step: 3 Shaping**

Shaping was done with the following steps:

- Take a small portion of the mixture and roll it into a cylindrical shape using your hands.
- Place the bamboo skewer at the center of the cylinder, gently pressing it to ensure it sticks firmly.
- Continue shaping the rest of the mixture into dhoop sticks, repeating the process.

➤ **Step: 4 Drying**

After shaping the dhoop sticks, it's important to let them dry properly which was done with the following step:

- Place the freshly shaped dhoop sticks on a newspaper or drying rack.
- Allow them to air dry in a cool and dry place for approximately 3-4 days.
- Turn the sticks occasionally to ensure uniform drying

➤ **Benefits of Flower Incense**

Flower incense offer various benefits, including:

- **Natural Fragrance:**
The combination of flower herbs creates a soothing and natural aroma.

- **Spiritual Significance:**

In many cultures, dhoop sticks made from waste flowers believed to purify the environment and promote positive energy.

- **Eco-Friendly:**

By using flowers and natural ingredients, you contribute to sustainable practices and reduce the use of chemical-laden incense sticks.

➤ **Safety Precautions**

While making flower incense, it's important to follow these safety precautions:

- Work in a well-ventilated area to avoid inhaling excess smoke.
- Use gloves or wash your hands thoroughly after handling flowers.
- Keep flammable materials away from the drying area.
- Store the dhoop sticks away from moisture and indirect sunlight to prevent incense.

Table 1 Ingredient for Eco-Friendly Incense Stick

S.No.	Ingredient	Purpose/Function	Approx. Ratio (per 100g base)
1	Dried Flower Powder	Fragrance, sacred reuse (rose, marigold, etc.)	30g
2	Charcoal Powder	Helps burning and combustion	20g
3	Sawdust	Filler and smooth burning	15g
4	Guggul (resin)	Aromatic & antimicrobial property	5g
5	Loban (Benzoin resin)	Loban (Benzoin resin)	5g
6	Clove Powder	Fragrance, antimicrobial effect	2g
7	Hawan Samagri	Spiritual aroma blend, purifying agent	5g
8	Clarified Butter (Ghee)	Natural binder, enhances spiritual value	3g
9	Honey	Main binder, adds sweet aroma	10g
10	Essential Oil/Fragrance	For final aroma enhancement (optional)	Few drops (as needed)

➤ Collection of Waste Flower from Temples



Fig 1 A Dry Flower



Fig 2 B Powder of Dry Flower

➤ Charchol



Fig 2 A Charchol Crystal



Fig 2 B Powder of Charchol



Fig 3 A Sawdust



Fig 3 B Sawdust

➤ Guggule



Fig 4 A Guggule Crystal



Fig 4 B Guggule Powder

➤ *Lohban*



Fig 5 A Crystal of Lohban



Fig 5 B Powder of Lohban



Fig 6 Honey

➤ *Clove*



Fig 7 A Clove



Fig 7 B Hawan Samagri



Fig 7 C Powder of Clove And Hawan Samagri



Fig 8 A Grinding



Fig 8 B Mixing

IV. RESULT AND DISCUSSION

The present study focused on the formulation of herbal-based, eco-friendly sticks using flower waste, hawan samagri, guggul, loban, clarified butter, clove, bela fragrance, and honey. The results demonstrate that the formulated sticks possess notable antimicrobial properties, sustainable utility, and potential as a source of women empowerment through small-scale production.

➤ *Physical Characteristics and Burning Properties:*

The herbal sticks exhibited good binding, shape retention, and slow, even burning. The inclusion of honey and clarified butter provided cohesive texture and burning efficiency. The smoke emitted was less irritating compared to



Fig 9 Shaping



Fig 10 Shaping



Fig 11 Testing

chemical-based agarbattis, indicating a healthier alternative for indoor use (Singh *et al.*, 2018).

➤ *Antimicrobial Activity:*

A comparative zone of inhibition test was conducted against common airborne bacteria such as *E. coli* and *Staphylococcus aureus*. Herbal sticks showed moderate antimicrobial effects, particularly those containing clove, guggul, and loban, known for their antimicrobial compounds (Das *et al.*, 2012; Sharma & Mishra, 2019).

- Clove (*Syzygium aromaticum*) contains eugenol, a potent antimicrobial agent
- Guggul (*Commiphora wightii*) and Loban (resin of *Styrax benzoin*) emit antiseptic smoke, traditionally used for purification (Patel *et al.*, 2015)

- Honey also contributed due to its natural antibacterial nature (Mandal & Mandal, 2011).

➤ *Role of Flower Waste and Hawan Samagri:*

Recycling temple flower waste not only supports waste management but also enhances fragrance and aesthetic appeal. Hawan samagri, a mix of dried herbs and plant resins, traditionally purifies air and was observed to reduce microbial load when used in smoke form (Tripathi et al., 2008). It also adds spiritual and cultural value to the sticks.

➤ *Economic and Social Impact:*

The preparation process is simple, cost-effective, and requires minimal tools, making it ideal for home-based businesses. Training women in local communities can empower them economically and socially, aligning with SDG goals (UN Women, 2020).

V. CONCLUSION

The present dissertation emphasizes the sustainable utilization of floral waste through the development of eco-friendly, herbal-based incense sticks. By using natural ingredients such as dried flower petals, charcoal, sawdust, guggul, loban, honey, clarified butter, and other herbal materials, a viable alternative to chemically manufactured incense sticks has been successfully formulated.

The process highlighted in this research not only addresses the critical issue of floral waste management but also ensures environmental conservation by avoiding the use of synthetic adhesives and toxic chemicals. The final product is biodegradable, non-toxic, and culturally relevant, thus supporting both environmental health and traditional values.

Moreover, this initiative holds significant potential for empowering women through small-scale, home-based businesses, contributing to rural livelihood generation and promoting green entrepreneurship. It serves as an excellent example of waste-to-wealth conversion, offering economic, social, and environmental benefits.

In conclusion, the project lays the foundation for future innovations in sustainable product development, aligns with the objectives of responsible consumption and production, and fosters a greener, healthier, and more inclusive society. This work not only supports environmental sustainability but also opens new avenues for eco-conscious enterprises and community empowerment.

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