



Preparation of Eco-Friendly Dhoop Sticks from Waste Flowers

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Abstract:

Large quantities of flowers are offered daily in temples, religious places, and social ceremonies. After their use, these flowers are usually discarded in rivers, lakes, or landfills, which leads to environmental pollution. The present study focuses on the utilization of waste flowers for the preparation of eco-friendly dhoop sticks. Waste flowers such as rose (*Rosa spp.*), marigold (*Tagetes spp.*), jasmine (*Jasminum spp.*), and chrysanthemum (*Chrysanthemum spp.*) were collected, dried, and converted into powder. The powdered material was mixed with natural binders such as gum powder, charcoal powder, and essential oils to prepare dhoop sticks. The prepared dhoop sticks were dried and evaluated for burning time, fragrance, and smoke characteristics. The results indicated that waste flowers can be successfully converted into aromatic dhoop sticks with good burning quality. This method helps in effective waste management, reduces environmental pollution, and provides an eco-friendly alternative to chemical-based incense products.

Keywords: Waste Flowers, Eco-Friendly Products, Dhoop Sticks, Recycling, Temple Waste Management

Introduction:

Flowers play an important role in religious rituals, festivals, and cultural ceremonies. In India, millions of flowers are used daily in temples, households, and public events. After their use, these flowers become waste and are often disposed of in water bodies or landfills. This improper disposal leads to environmental pollution and accumulation of organic waste. Floral waste contains natural aromatic compounds, pigments, and organic materials that can be reused for preparing various eco-friendly products such as incense sticks, dhoop sticks, natural dyes, compost, and biodegradable materials. Recycling floral waste not only helps reduce environmental pollution but also promotes sustainable utilization of natural resources.

Dhoop sticks are commonly used in religious rituals, meditation practices, and aromatherapy. Conventional incense products often contain synthetic chemicals that may produce harmful smoke during burning. Therefore, there is increasing interest in developing eco-friendly incense products using natural materials. The present study aims to utilize waste flowers for the preparation of eco-friendly dhoop sticks. This approach converts organic waste into a valuable product and supports environmental sustainability.

Floral Waste and Environmental Issues



India generates large quantities of floral waste from temples, weddings, festivals, and religious ceremonies. Much of this waste is dumped into rivers or open areas, leading to environmental pollution.

The major environmental problems caused by floral waste include:

- Water pollution due to decomposition of organic material
- Decrease in dissolved oxygen in water bodies
- Growth of harmful microorganisms
- Release of unpleasant odor
- Accumulation of biodegradable waste in landfills

Recycling floral waste into incense products can significantly reduce these environmental impacts.

Materials and Methods:

Collection of Waste Flowers: Waste flowers such as rose (*Rosa spp.*), marigold (*Tagetes spp.*), jasmine (*Jasminum spp.*), and chrysanthemum (*Chrysanthemum spp.*) were collected from local temples, flower markets, and households.

Drying of Flowers: The collected flowers were washed to remove dust and impurities. They were then spread on trays and dried under shade for 5–7 days until complete moisture removal was achieved.

Preparation of Flower Powder:

The dried flowers were ground using a grinder to obtain fine powder. The powder was sieved to obtain uniform particle size suitable for dhoop stick preparation.

Preparation of Dhoop Stick Mixture



The following materials were used for the preparation of dhoop sticks:

- Waste flower powder
- Charcoal powder
- Jigat powder (natural binder)
- Gum powder
- Essential oils (rose or sandalwood)
- Water

Mixture Ratio:

Ingredient	Quantity
Flower powder	40%
Charcoal powder	30%
Jigat powder	20%
Gum powder	5%
Essential oil	2–3%
Water	Required quantity

All ingredients were mixed thoroughly to form a uniform dough.

Formation of Dhoop Sticks:



The prepared dough was manually rolled into stick-shaped structures or molded into cone-shaped dhoop sticks. The sticks were shaped carefully to maintain uniform size and thickness.

Drying of Dhoop Sticks

The prepared dhoop sticks were dried under shade for **48–72 hours** until they became hard and moisture-free.

Proper drying ensures:

- Good structural stability
- Smooth burning characteristics
- Longer shelf life

Evaluation of Dhoop Sticks:

The prepared dhoop sticks were evaluated based on the following parameters:

- Burning time
- Fragrance intensity
- Smoke production
- Ash formation

Observations:

Parameter	Observation
Burning time	25–35 minutes
Fragrance	Pleasant floral aroma
Smoke production	Moderate
Ash formation	Light grey ash

Results and Discussion:

The eco-friendly dhoop sticks prepared from floral waste showed satisfactory burning characteristics and structural stability. The natural flower powder provided a pleasant aroma without the need for synthetic fragrances. Charcoal powder improved the combustion process and ensured uniform burning, while jigat powder served as an effective natural binder. The addition of essential oils enhanced the fragrance quality.

Compared to commercially available incense products, the prepared dhoop sticks produced relatively less toxic smoke because they were free from artificial chemical additives. The results demonstrate that recycling floral waste into incense products is an effective method for sustainable waste management.

Environmental and Economic Benefits:**Environmental Benefits:**

Reduction of temple flower waste pollution. Prevention of dumping flowers into rivers and Sustainable organic waste recycling

Economic Benefits:

- Low production cost
- Employment opportunities for rural communities
- Suitable for small-scale industries and self-help groups

Conclusion:

The present study demonstrates that waste flowers can be effectively utilized for the preparation of eco-friendly dhoop sticks. The method is simple, cost-effective, and environmentally sustainable. Recycling floral waste into incense products reduces environmental pollution and provides an eco-friendly alternative to chemical-based incense

sticks. The technology can be adopted by temples, small-scale industries, and self-help groups to promote sustainable waste management practices.

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