

## ABSTRACT:

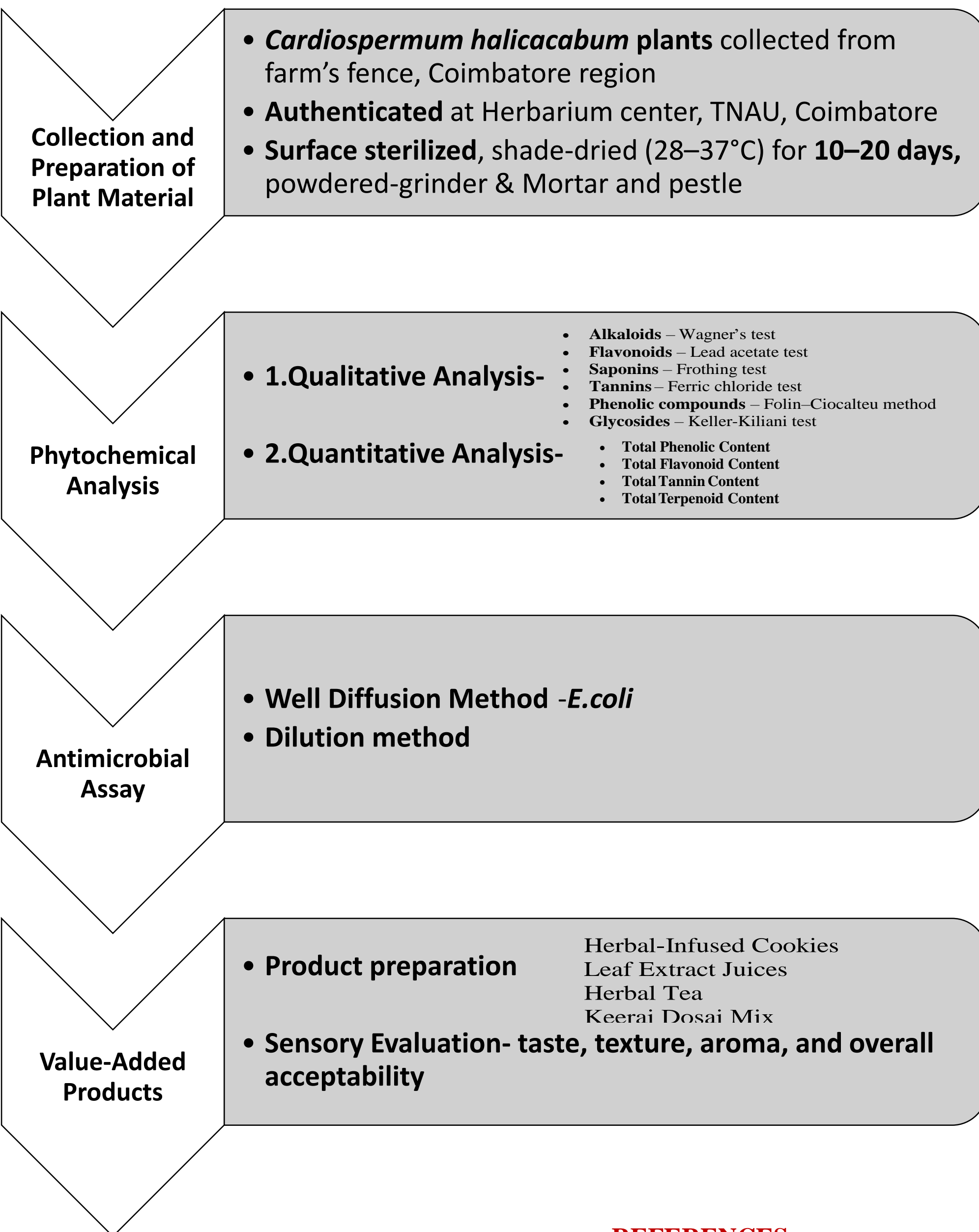
Plants have long been recognized as vital resources for combating various diseases. *Cardiospermum halicacabum*, commonly known as Balloon Vine or Nature's Heart, is a medicinally significant plant traditionally used to address a wide range of ailments, from skin disorders to inflammation. This study explores the medicinal properties of Balloon Vine with the objective of formulating nutrient-rich cookies infused with its extract. The research involves phytochemical analysis and evaluation of the plant's antimicrobial activity to assess its potential benefits. By incorporating Balloon Vine into millet-based products, this study aligns with governmental initiatives to support farmers while promoting health through sustainable and nutritious food choices. In an era where diseases and infections are escalating due to unhealthy dietary habits and other factors, this work offers a novel approach to creating value-added products that merge traditional wisdom with modern health needs. The findings aim to pave the way for healthier dietary options, contributing to the well-being of future generations.

Keywords: *Cardiospermum halicacabum*, cookies, millet, value added product.

## INTRODUCTION:

Nature's Heart-*Cardiospermum halicacabum*, commonly called as balloon vine or *Mudakathan Keerai* in Tamil, is a medicinal climber plant commonly used in traditional and conventional practices. *Cardiospermum* is used for its anti-inflammatory, analgesic, antioxidant properties, etc (Abirami et al., 2022). Various value-added products can be derived from this plant to enhance its commercial and medicinal potential. The leaves and stems are used to prepare **herbal tea and decoction** for treating colds, fever, and digestive issues (DeFilipps et al., 2018), Fresh leaves are blended into **juices** that help in detoxification and improve joint health. **Herb Infused Millet Cookies** are prepared from extracts mixed with jiggery and baking powder for added health benefits, particularly for respiratory conditions. The enriched products with *C. halicacabum* is prepared for health-conscious consumers. The value-added products of *Cardiospermum halicacabum* supports with the growing demand for herbal or natural health solutions. These products offer economic benefits to farmers and consumers with sustainable well-being practices.

## METHODOLOGY



## RESULTS

Fresh plant samples were collected from the fence of a farm land near Irugur, Coimbatore region (Fig 1). The surface sterilized fresh and shadow dried (20 days) leaves powdered for the phytochemical analysis (Fig.2).

### Plant Identification and authentication:

The collected plant sample was submitted for the identification and authentication in the Herbarium center, TNAU, Coimbatore (Fig .3).

The Nomenclature of the plant are ;

- Botanical name: *Cardiospermum halicacabum*
- Family: Sapindaceae
- Common names: Natures heart, Ballon vine
- Part used:Leaves and whole plant
- Growth Habitat: Climber or herb in the fences of the dry places.



Fig 1. Fresh plant sample



Fig.2.Leaf grind by Mortar and pestle

### Phytochemical analysis:

Preliminary qualitative phytochemical screening of *Cardiospermum halicacabum* revealed the presence of all the compounds in the aqueous extracts (Fig 4, Table 1).

The quantitative assay revealed the presence of most of the compounds, but only tannin and terpenoids are above 2grams (Graph 1, Fig 5);

**Antimicrobial activity** for the fresh aqueous extracts of *Cardiospermum halicacabum* against the *E.coli* bacteria by dilution method scored the inhibition in all the tests (fig 4 and graph 1).

Well diffusion revealed the deposit of the leaf particles.



Fig.3. Plant authentication report

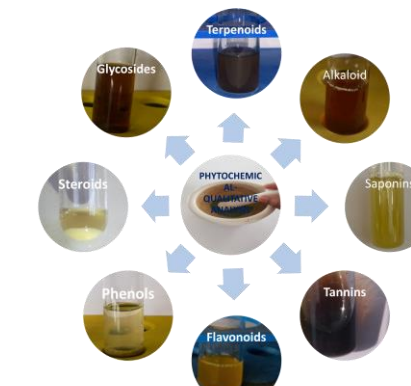


Fig 4 Results of Qualitative phytochemical analysis

Phytochemical	Results
Alkaloids	Positive
Flavonoids	Positive
Glycosides	Positive
Tannins	Positive
Steroids	Positive
Terpenoids	Positive
Phenols	Positive
Saponins	Positive

Table.1. Results of Qualitative phytochemical analysis

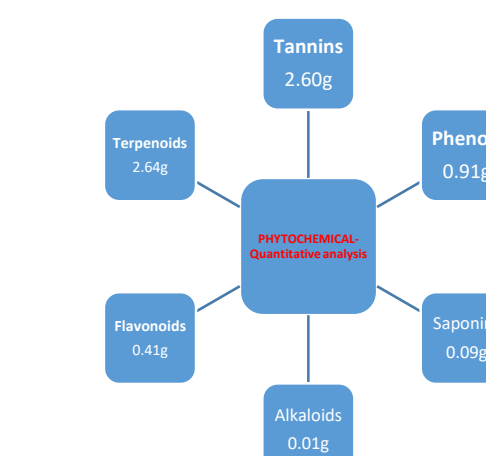
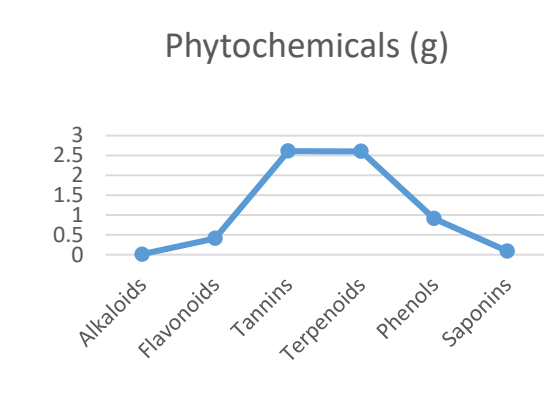


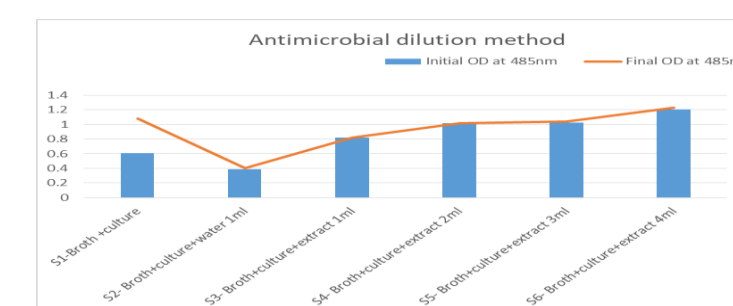
Fig 5. Results of quantitative phytochemical analysis



Graph 1. Results of quantitative phytochemical analysis



Fig.6. Antimicrobial Assay by dilution method



Graph 2. Antimicrobial Assay results by dilution method



Fig 7. Herb infused millet cookies

### Value-Added Product preparation:

Based on the results of phytochemical and antimicrobial assays, different Value added products using fresh extracts of *Cardiospermum halicacabum*, are produced.

**Herb infused millet Cookies** (Teresa et al 2023): Millet flour, jaggery, baking ingredients and 10 percent of the fresh leaf extracts is mixed to prepare the dough for the cookies, small flat cookies are prepared and baked in the OTG for 3 to 5 minutes. The cookies were slightly brown and crispy brown at the center. The taste was good with the aroma of millet (Fig 7).

**Herbal Tea or Decoctions** (Panellira et al 2004): Tea or decoction was prepared with water, jaggery and 10 percent of fresh leaf in the beaker boiled for 10-20 minutes. The hot filtered tea was light green in color and the taste was good with aroma of the leaf.

**Leaf Extract Juices** (Norzahirah et al 2022): 10 percent of fresh leaf extract, cold water, lemon juice of 5-10ml and jiggery was blended in the beaker to get froth. The taste was good with aroma of the leaf and lemon, the pale green.colour was very appealing.

**Sensory Evaluation** (Niladri and Rajat 2023): The taste, colour, smell and texture was checked for the value added products of the Nature's heart plant. It was good in all the organoleptic analysis. The concentration may be increased as per the requirements of the individuals. Around 30 students and staff submitted the feedback forms. Above 93 percent of them stated that the products are good and 7 percent of them noted that colour and taste are fair. The shelf life of the products should be checked in the room temperature and in the refrigerated condition for the next stage of the product development.

## CONCLUSION

This study provided a new perspective of traditional value added product preparation based on the results of the phytochemical analysis, antimicrobial assays, and nutritional or health benefits of the plant Nature's Heart-*Cardiospermum halicacabum*. Its availability throughout the year and proper storage of the shadow dried powder will enhance the commercial potential in value-added food products, supporting natural health and wellness of the living beings.

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