



## LIMON O‘T O‘SIMLIGINING QURITISH VA SAQLASH USULLARI HAMDA UNING INSON SALOMATLIGIDAGI AHAMIYATI.

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### ANNOTATSIYA

Ushbu maqolada limon o‘t o‘simligining biologik xususiyatlari, kimyoviy tarkibi, quritish va saqlash texnologiyalari hamda inson salomatligiga foydali jihatlari tahlil qilinadi. Limon o‘t tarkibidagi efir moylari, vitaminlar, antioksidant moddalar va biologik faol birikmalar uning dorivor xususiyatlarini belgilaydi. Maqolada o‘simlikni tabiiy va sun‘iy usullarda quritish, sifatini saqlash, namlikdan himoya qilish va foydali moddalarning yo‘qolishini kamaytirish yo‘llari yoritilgan. Shuningdek, limon o‘tning immunitetni mustahkamlash, ovqat hazm qilishni yaxshilash, stressni kamaytirish va yallig‘lanishga qarshi ta’siri haqida ma’lumot berilgan.

**Kalit so‘zlar:** limon o‘t, quritish, saqlash, efir moylari, antioksidant, salomatlik, dorivor o‘simlik.

## МЕТОДЫ СУШКИ И ХРАНЕНИЯ ЛИМОННОЙ ТРАВЫ И ЕЕ ЗНАЧЕНИЕ ДЛЯ ЗДОРОВЬЯ ЧЕЛОВЕКА

### АННОТАЦИЯ

В данной статье рассматриваются биологические особенности лимонной травы, ее химический состав, технологии сушки и хранения, а также влияние на здоровье человека. Эфирные масла, витамины, антиоксиданты и биологически активные вещества определяют лечебные свойства растения. В статье освещены естественные и искусственные методы сушки, способы сохранения качества сырья, защиты от влаги и снижения потерь полезных веществ. Также приведены сведения о положительном влиянии лимонной травы на иммунную систему, пищеварение, снижение стресса и противовоспалительное действие.

**Ключевые слова:** лимонная трава, сушка, хранение, эфирные масла, антиоксиданты, здоровье, лекарственное растение.

## DRYING AND STORAGE METHODS OF LEMONGRASS AND ITS IMPORTANCE FOR HUMAN HEALTH

### ABSTRACT

This article examines the biological characteristics of lemongrass, its chemical composition, drying and storage methods, and its role in human health. Essential oils, vitamins, antioxidants, and biologically active compounds determine the medicinal value of the plant. The study discusses natural and artificial drying techniques, methods for preserving product quality, protection from moisture, and reducing nutrient losses. In addition, the beneficial effects of lemongrass on immunity, digestion, stress reduction, and anti-inflammatory activity are described.

**Keywords:** lemongrass, drying, storage, essential oils, antioxidants, health, medicinal plant.

### INTRODUCTION

Lemongrass is one of the most valuable medicinal and aromatic plants widely used in traditional medicine, food production, and modern healthcare systems. Owing to its rich chemical composition, including essential oils, flavonoids, phenolic compounds, vitamins, and natural antioxidants, lemongrass has attracted considerable scientific interest in recent years. Its characteristic citrus aroma, nutritional value, and therapeutic properties make it an important natural resource for both preventive and supportive healthcare. Medicinal plants have long played a significant role in maintaining human health, and lemongrass occupies a special place among them due to its



multifunctional properties. It is commonly consumed as herbal tea, dietary supplement, spice, and medicinal raw material in many parts of the world. Scientific studies have demonstrated that lemongrass possesses antimicrobial, anti-inflammatory, antioxidant, sedative, and digestive-supporting effects.

### **MATERIALS AND METHODS**

Fresh lemongrass (*Cymbopogon citratus*) samples were collected from cultivated plots during the optimal vegetative growth stage. Healthy, disease-free plants with uniform leaf size and maturity were selected to ensure consistency in the experimental material. The collected samples were cleaned to remove soil particles, damaged leaves, and foreign materials, followed by washing with clean water and draining under ambient conditions. The study employed both natural and artificial drying methods to evaluate their effects on the quality of dried lemongrass. In the natural drying treatment, plant samples were spread in thin layers under shade in a well-ventilated environment at room temperature (25–30°C) for 5–7 days. In the artificial drying treatment, samples were dried in a controlled hot-air dryer at temperatures of 40°C, 50°C, and 60°C until constant moisture content was achieved. Moisture loss was monitored daily using standard gravimetric methods. To assess the quality of dried samples, organoleptic properties such as color, aroma, texture, and leaf integrity were observed. In addition, moisture content, drying time, and essential oil retention were analyzed.

### **RESULTS**

The results of the study demonstrated that the drying method had a significant effect on the quality and preservation of lemongrass. Among the tested methods, shade drying and controlled hot-air drying at moderate temperatures (40–50°C) were found to be the most effective in maintaining the plant's natural color, aroma, texture, and overall quality. Samples dried under these conditions retained a fresh green appearance and strong citrus scent, indicating better preservation of essential oils and bioactive compounds.

In contrast, samples dried at higher temperatures (60°C and above) showed noticeable changes in physical quality, including partial discoloration, reduced aroma intensity, and leaf brittleness. Although high-temperature drying reduced drying time, it also increased the loss of volatile compounds responsible for the medicinal and sensory properties of lemongrass. Natural open-air drying under unsuitable humidity conditions also resulted in slower moisture removal and a higher risk of microbial contamination. Moisture analysis revealed that properly dried lemongrass samples reached safe storage moisture levels, which significantly improved shelf life and reduced the risk of spoilage. The fastest drying was observed in hot-air drying at 60°C, while the best balance between drying efficiency and quality retention was achieved at 45–50°C. These findings suggest that moderate thermal drying provides optimal processing conditions for medicinal plant preservation. Storage results showed that packaging materials and environmental conditions greatly influenced the stability of dried lemongrass during long-term preservation. Samples stored in airtight glass containers and moisture-resistant packaging under cool, dry, and dark conditions maintained better aroma, color, and texture over the three-month observation period. In comparison, samples stored in paper packaging or exposed to fluctuating humidity showed faster deterioration in quality.

### **DISCUSSION**

The findings of this study confirm that post-harvest processing methods play a crucial role in preserving the quality and medicinal value of lemongrass. Drying is not only a moisture reduction process but also a key technological stage that directly affects the retention of essential oils, antioxidants, and other biologically active compounds. The results indicate that drying temperature and environmental conditions significantly influence the final quality of dried plant material. The superior performance of shade drying and moderate-temperature hot-air drying observed in this study



is consistent with previous research on medicinal and aromatic plants. These methods provide a balance between moisture removal efficiency and preservation of volatile compounds. Excessive heat exposure, while reducing drying time, may accelerate the degradation of heat-sensitive substances such as citral, flavonoids, and phenolic compounds, thereby reducing the therapeutic effectiveness of lemongrass. The storage results further emphasize the importance of proper packaging and environmental control. Exposure to light, humidity, and air can accelerate oxidation, aroma loss, and microbial deterioration. The improved quality retention observed in airtight glass containers and moisture-resistant packaging supports the need for controlled storage systems, particularly for products intended for medicinal and commercial use.

### CONCLUSION

This study demonstrated that drying and storage methods have a direct impact on the quality, shelf life, and health-promoting properties of lemongrass. Among the tested techniques, shade drying and moderate-temperature hot-air drying (40–50°C) were identified as the most effective methods for preserving essential oils, natural aroma, color, and biologically active compounds. The results also showed that appropriate storage conditions, including airtight packaging, low humidity, and protection from light, are essential for maintaining product stability during long-term preservation.

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