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FUNDACIÓN DEMOCRÁTICA ITALO AMERICANA, FDIA - REPRESENTAÇÃO PERMANENTE WOULD LIKE TO CREATE A MEDITERRANEAN SAFFRON GROUP FOCUSING ON WOMEN'S INCLUSION ACROSS MEDITERRANEAN COUNTRIES COULD BE A POWERFUL FORCE FOR ECONOMIC EMPOWERMENT, SUSTAINABLE AGRICULTURE, AND GENDER EQUALITY.

WOMEN'S INCLUSION IN SAFFRON CULTIVATION

ENCOURAGING WOMEN FROM MEDITERRANEAN COUNTRIES SUCH AS ITALY,MOROCCO, TUNISIA, ALGERIA, EGYPT, AND LIBYA TO PARTICIPATE IN HYDROPONIC SAFFRON FARMING.

TRAINING PROGRAMS ON MODERN, SUSTAINABLE FARMING METHODS LIKE HYDROPONICS AND VERTICAL FARMING IN GREENHOUSES.

PROVIDING ECONOMIC OPPORTUNITIES FOR WOMEN IN RURAL AREAS TO GROW, PROCESS, AND MARKET MEDICINAL-GRADE SAFFRON.

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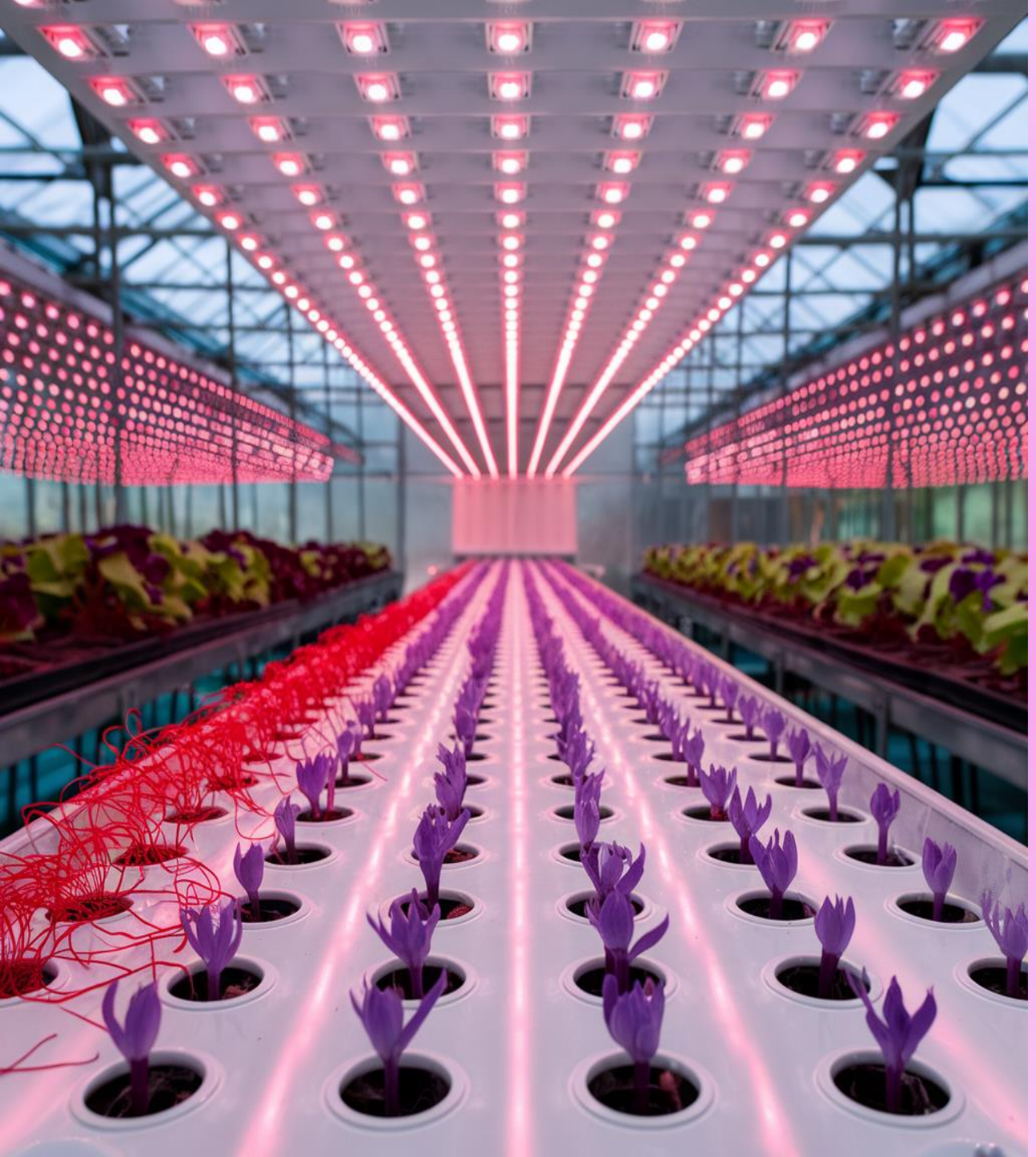
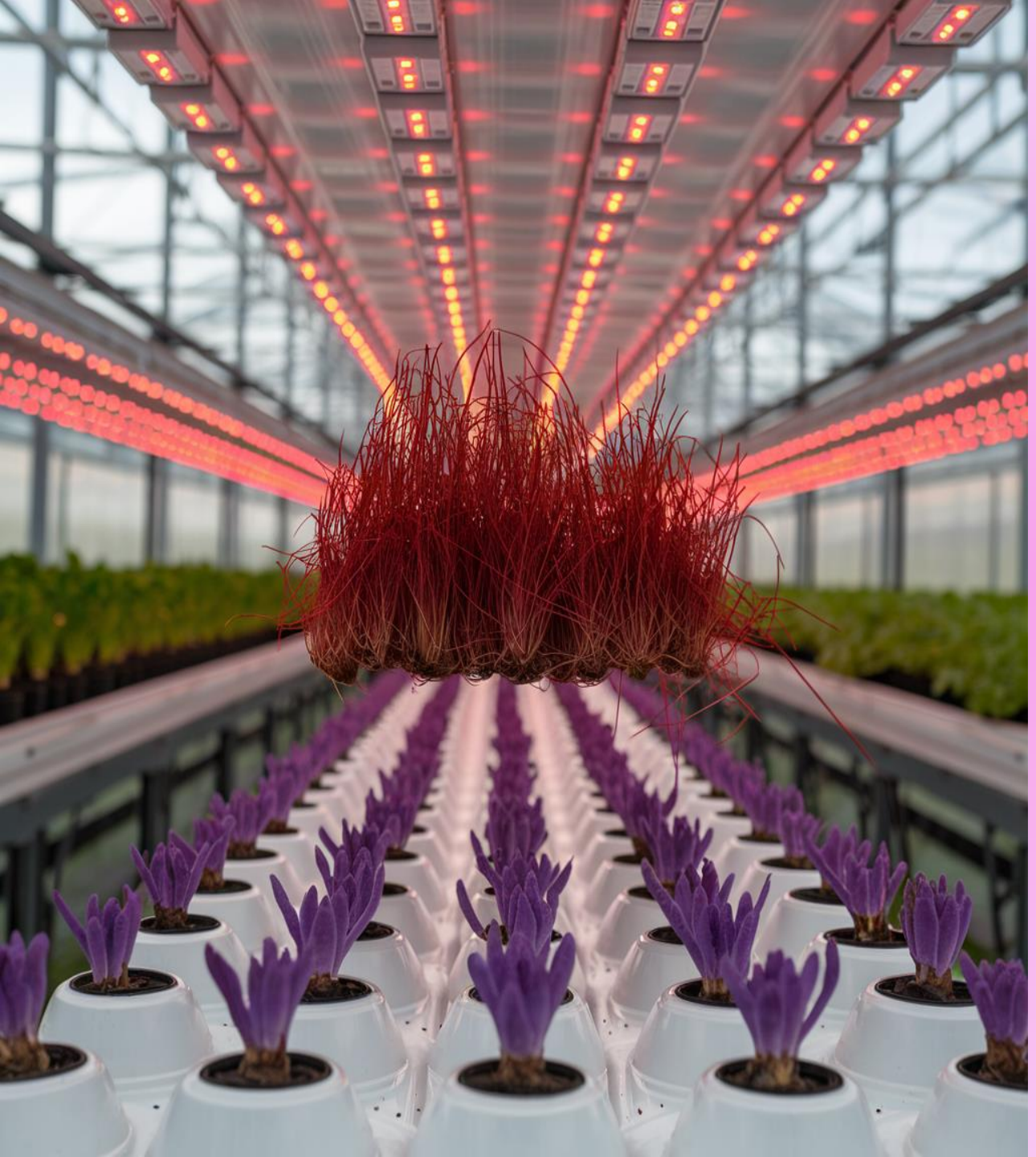


2. Vertical Farming to Maximize Yield

- **Multi-Layer Racks**: Stacking saffron plants increases output per square meter.
- **Controlled Environment**: Temperature, humidity, and airflow must be optimized for corm growth and flowering.

3. LED Lighting for Optimal Growth

- **Light Spectrum**: Blue (450 nm) and red (660 nm) LEDs promote vegetative growth and flowering.
- **Light Cycle**: Saffron requires a dormancy period (cool/dark) before inducing flowering with specific light schedules.
- **Energy Efficiency**: LEDs reduce power consumption compared to traditional grow lights.



4. Greenhouse for Climate Control

•**Temperature Regulation**: Maintain 15-20°C (59-68°F) for flowering and 25°C (77°F) for vegetative growth.

•**Humidity Management**: Saffron corms prefer 40-60% RH.

•**CO_2 Enrichment**: Enhancing CO_2 levels can improve photosynthesis and biomass production.

5. Medicinal & Pharmaceutical Applications

•**High Crocin Content**: Controlled conditions can enhance the bioactive compounds (crocin, picrocrocin, and safranal) in saffron.

•**Quality Assurance**: Hydroponic saffron can be free from soil contaminants and heavy metals, ensuring pharmaceutical-grade purity.

•**Extraction & Processing**: Post-harvest drying and extraction methods should preserve saffron's medicinal properties.

6. Sustainability & Automation

•**AI & IoT Sensors**: Monitor nutrient levels, humidity, and light intensity for precision farming.

•**Renewable Energy**: Solar panels can power LEDs and greenhouse climate systems.

•**Waste Reduction**: Recycling water and nutrients minimizes environmental impact.

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PROMOTES WOMEN AGRICULTURE AND ENTREPRENEURSHIP IN THE MEDITERRANEAN SAFFRON INDUSTRY.

SUPPORTED BY FDIA (FUNDACIÓN DEMOCRÁTICA ITALO AMERICANA) AND ITS PERMANENT REPRESENTATION.
ADVOCATES FOR FAIR WAGES, FAIR LABOR RIGHTS, AND FINANCIAL INDEPENDENCE FOR WOMEN WORKING IN SAFFRON PRODUCTION.
ESTABLISHES A NETWORK OF WOMEN FARMERS, SCIENTISTS, AND ENTREPRENEURS TO EXCHANGE KNOWLEDGE AND BEST PRACTICES.
SUSTAINABILITY & HIGH-QUALITY PHARMACEUTICAL SAFFRON PRODUCTION

USING CONTROLLED-ENVIRONMENT FARMING (HYDROPONICS, LED, VERTICAL FARMING) TO IMPROVE SAFFRON YIELD AND PURITY.
ENSURING ORGANIC, PESTICIDE-FREE, AND MEDICINAL-GRADE SAFFRON FOR PHARMACEUTICAL USE.
PROMOTING ECO-FRIENDLY AND WATER-EFFICIENT CULTIVATION METHODS SUITABLE FOR ARID MEDITERRANEAN CLIMATES.

PHARMA 1 HUMANITAS
HEALTH – BEAUTY - HI-TECH

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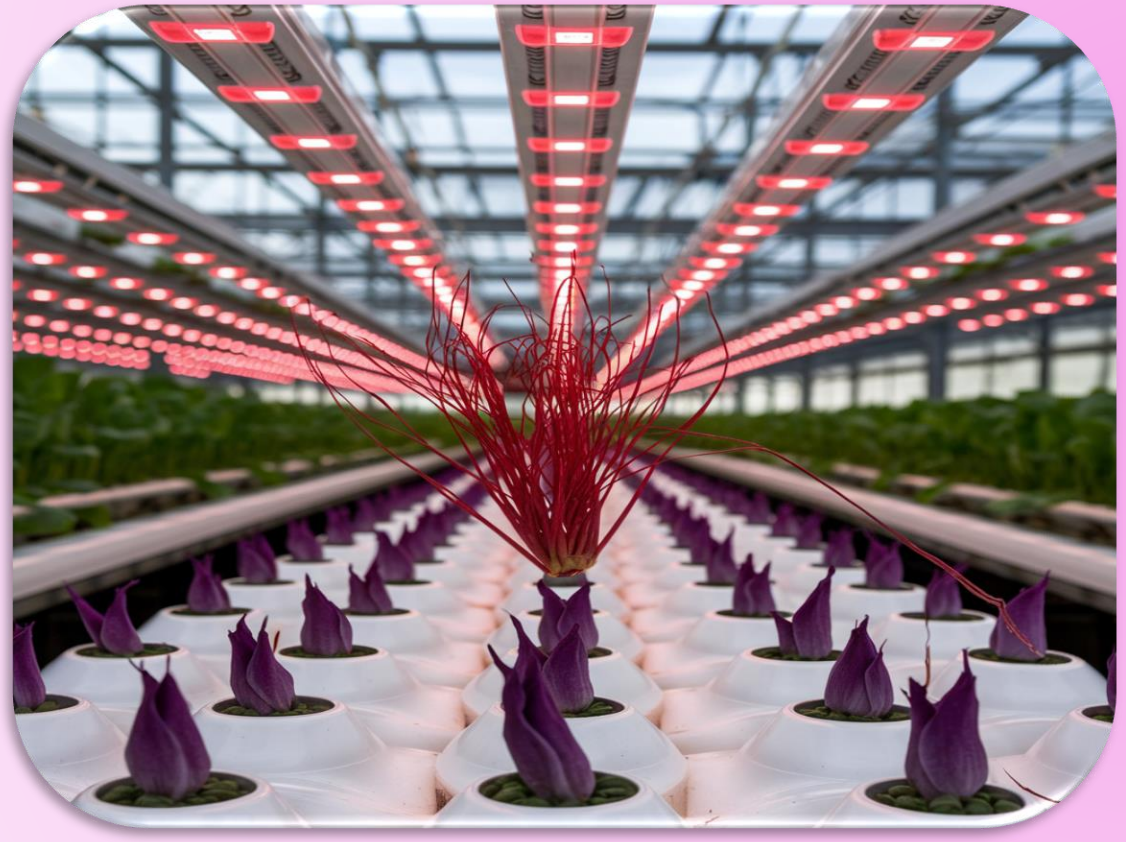
MEDICINAL PLANT INCUBETOR



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Hydroponics for Saffron Cultivation

- **System Choice**: Aeroponics or nutrient film technique (NFT) can be ideal for saffron corms.
- **Nutrient Solution**: A balanced mix of nitrogen, phosphorus, potassium, and micronutrients is essential.
- **Water Efficiency**: Hydroponics significantly reduces water use compared to soil-based cultivation.

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3D CAD DESIGN OF THE FUTURE INFRASTRUCTURE COMPLEX OF THE RESEARCH & DEVELOPMENT POLE TO SPIN-OFF

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SPIN-OFF A FACILITY INFRASTRUCTURE & AUTOMATION LABORATORY IN EUROPE & AFRICA FOR RESEARCH & DEVELOPMENT

- **TOTAL FACILITY AREA**: **10,000 SQUARE METERS**, WITH **2,000 M² DEDICATED TO BULB MAINTENANCE, PROCESSING, AND LOGISTICS**.
- **PRODUCTION AREA**: **8,000 M²**, FEATURING A **FIVE-LAYER VERTICAL FARMING SYSTEM**, TOTALING **25,000 M² OF CULTIVATION SPACE**.
- **AUTOMATED SYSTEMS**: THE **HIGHLY MECHANIZED** FACILITY ENSURES **PRECISION, EFFICIENCY, AND MINIMAL RESOURCE CONSUMPTION**.

THIS INNOVATIVE APPROACH TO **SAFFRON FARMING** NOT ONLY **INCREASES PRODUCTION CAPACITY** BUT ALSO MAKES THE PROCESS **MORE SUSTAINABLE, COST-EFFECTIVE, AND SUITABLE FOR LARGE-SCALE PHARMACEUTICAL APPLICATIONS**.

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•Partnering with research institutions, universities, and NGOs to improve saffron cultivation techniques.

• Establishing fair trade partnerships to ensure women farmers receive fair compensation for their saffron.

•Potential Impact:

- ✅ Empowers women through economic independence and leadership in agriculture.
- ✅ Strengthens Mediterranean agricultural heritage by modernizing saffron farming.
- ✅ Promotes sustainability through climate-smart agricultural practices.
- ✅ Boosts pharmaceutical-grade saffron production, benefiting global health and medicine.

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The Italian *Crocus etruscus*, with a focus on its pollination mechanisms and self-incompatibility. The research is relevant to FUNDACIÓN DEMOCRÁTICA ITALO AMERICANA, FDIA -REPRESENTAÇÃO PERMANENTE & pharma1humanitas holdings ltd because *Crocus* species, particularly *Crocus sativus* (saffron), contain bioactive molecules that may have therapeutic potential for neurodegenerative diseases like Alzheimer's and Parkinson's.

Key findings:

- **Self-Incompatibility**: The study confirms that *Crocus etruscus* exhibits partial self-incompatibility, which influences seed production and genetic diversity.
- **Pollination Studies**: Experimental hand pollination revealed that cross-pollination yields a significantly higher fruit and seed set compared to self-pollination.
- **Reproductive**: The research quantifies seed viability and the role of stigma-anther distance in reproductive success.
- **Statistical Analysis**: Various indices and statistical models were used to assess self-compatibility, correlating reproductive success with morphological traits.

Relevance to FDIA: FUNDACIÓN DEMOCRÁTICA ITALO AMERICANA, FDIA -REPRESENTAÇÃO PERMANENTE & pharma1humanitas holdings ltd research into saffron's bioactive compounds for neurodegenerative disease treatment could benefit from botanical and biochemical insights derived from the *Crocus* genus. The reproductive biology findings can inform sustainable cultivation strategies for medicinal saffron production, ensuring genetic diversity and optimizing bioactive compound yield.

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This innovative approach to saffron farming not only increases production capacity but also makes the process more sustainable, cost-effective, and suitable for large-scale pharmaceutical applications.
Our study has identified and analyzed the brain-protective compounds in saffron, establishing its chemical composition for the first time. Among its active ingredients, four primary crocins—water-soluble pigments responsible for saffron's golden color—play a vital role. Although saffron's genetic structure remains largely unchanged, we have found that its neurological benefits rely heavily on precise crocin ratios rather than general properties. Beyond its well-known antioxidant capabilities, saffron influences gene expression and suppresses neuroinflammation, effectively slowing down neurodegenerative diseases. Using specialized expertise, we extract saffron at its highest purity while maintaining the ideal therapeutic proportion of its active compounds. Our formulations have demonstrated effectiveness in addressing age-related macular degeneration and genetic conditions that cause early-onset vision loss. Additionally, research suggests that retinal biomarkers could serve as an early detection method for Alzheimer's disease. Furthermore, Pharma1Humanitas Holdings Ltd is preparing to assess its neuroprotective nutraceutical products in an upcoming Phase I clinical trial.

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Saffron is derived from the **dried stigmas** of the Crocus sativus flower. It is widely used in **spices, food coloring, textiles, cosmetics, antioxidants, and medicinal applications**.

Medicinal Applications of Saffron

Recent studies indicate that saffron possesses **neuroprotective and therapeutic properties**, making it a promising ingredient in medicine.

- **Alzheimer's Disease**: Clinical trials suggest that consuming saffron extract for **22 weeks** may improve symptoms **as effectively as donepezil (Aricept)**, a common Alzheimer's medication.
- **Depression**: Research shows that **6-8 weeks** of saffron supplementation may significantly alleviate symptoms of **major depressive disorder**, with effects comparable to **low-dose antidepressants** such as fluoxetine or imipramine.
- **Menstrual Pain Relief**: A formula combining **saffron, anise, and celery seed extracts** has been found to **reduce menstrual discomfort**.
- **Premenstrual Syndrome (PMS)**: Studies suggest that consuming **saffron extract for two menstrual cycles** can significantly **reduce PMS symptoms**.

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Innovations in Saffron Cultivation

The production facility employs **cutting-edge agricultural methods** to significantly **enhance saffron yield** and **optimize efficiency**.

Key Improvements:

- **Increased Production Cycles**: Traditional saffron cultivation typically allows for **one harvest per year**, while the new **aeroponic vertical farming** system increases this to **three to four annual cycles**.
- **Higher Yield Efficiency**: The advanced farming methods improve **output per square meter by 900%** compared to conventional techniques.
- **Enhanced Working Conditions**: Automation eliminates **labor-intensive harvesting**, reducing **costs associated with manual labor**.

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MEDITERRANEA SAFFRON DATA SHEET

Product Name: NATURAL ORGANIC RED SAFFRON

- **Scientific Name:** *Crocus sativus*
- **Origin:** Italy,Morocco (new Mediterranen countries t.b.d)
- **Certification:** Organic, Non-GMO, EU Certified

2. Physical & Chemical Properties

- **Color:** Deep Red (stigmas only, no yellow or white parts)
- **Aroma:** Intense floral and honey-like fragrance
- **Taste:** Slightly bitter with earthy and honey-like notes
- **Moisture Content:** ≤ 12%
- **Particle Size:** Whole threads (stigmas)

3. Active Compounds (ISO 3632 Certified Analysis)

- **Crocin (Color Strength):** ≥ 220 (High-quality saffron)
- **Picrocrocin (Bitterness):** ≥ 85
- **Safranal (Aroma):** ≥ 40

4. Cultivation & Harvesting

- **Farming Method:** 100% Organic, Chemical-Free
- **Soil Type:** Well-drained, loamy soil with organic compost
- **Harvesting Time:** October – November
- **Harvesting Method:** Handpicked at dawn to preserve aroma and potency
- **Drying Process:** Slow, traditional drying at controlled temperatures (30-40°C)

Future Certifications & Compliance scenario

✅ EU Organic Certified
✅ ISO 3632 Certified (Highest Quality Standard for Saffron)
✅ HACCP & GMP Certified Processing
✅ Fair Trade & Ethical Sourcing

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5. Quality & Purity Standards

- **Adulterants:** None (No artificial coloring or synthetic additives)
- **Foreign Matter:** 0% (No floral debris, dust, or synthetic saffron)
- **Pesticides & Heavy Metals:** Free from pesticides, tested for heavy metals

6. Nutritional Profile (Per 100g)

- **Calories:** 310 kcal
- **Carbohydrates:** 65g
- **Protein:** 11g
- **Fat:** 6g
- **Fiber:** 3.9g
- **Iron:** 11.1 mg
- **Magnesium:** 264 mg
- **Vitamin C:** 80 mg

7. Packaging & Storage

- **Packaging Options:**
  - Glass jars (1g, 5g, 10g)
  - Vacuum-sealed containers (bulk: 100g, 500g, 1kg)
  - Airtight tin boxes for pharmaceutical-grade saffron
- **Storage Conditions:**
  - Store in a cool, dark place (<20°C, humidity <50%)
  - Keep away from direct sunlight and moisture

8. Applications & Uses

- **Pharmaceutical & Medicinal Use:** Antioxidant, anti-inflammatory, mood-enhancing properties

SUPPLIER/STARTUP INCUBATOR

IT IS REPRESENTED BY PHARMA1HUMANITAS HOLDINGS LTD

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PROJECT OWNER/PROJECT DEVELOPER

FUNDACIÓN DEMOCRÁTICA ITALO AMERICANA, FDIA - REPRESENTAÇÃO PERMANENTE REPRESENTED BY:
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