

MULTIFUNCTIONAL EQUIPMENT FOR THE OBTAINMENT OF PLANT EXTRACTS	
<i>Offering Organization:</i>	Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C.
<i>Type of Organization:</i>	Public Research Center
<i>Development Stage:</i>	Laboratory
<i>Desired Relationship:</i>	<ul style="list-style-type: none"> – Technological research and development financing (technological partner) – Specialized application tests – Creation of a new company (Joint Venture) for the commercialization of the products outlined herein – Licensing of patents
<i>Sector:</i>	Agriculture
<i>Area of knowledge:</i>	Mechanics
<i>Key words:</i>	Vegetable extracts, polyfunctional machine, polyfunctional equipment, multifunctional machine, multifunctional equipment, multipurpose machine, multipurpose equipment
DETAILED DESCRIPTION:	
<i>Problem to be solved:</i>	
<p>There is an enormous diversity of plant species that contain active ingredients and the market lacks adequate equipment that is easy to install and operate in order to take advantage of these extracts on a scale similar to that of cultivating farmland. These active ingredients have been minimally exploited and the knowledge of the healing and therapeutic properties of many of these species is being wasted.</p>	
<i>Solution:</i>	
<p>The multifunctional equipment used to obtain plant extracts was designed to accomplish various operations required by the extraction processes with only an exchange of machine accessories. This equipment can perform the following operations: hydrodistillation, steam distillation, packed column distillation, organic solvent extraction, enfleurage-type extraction, maceration, and evaporation for the creation of essential oils, oleoresins, natural dyes, creams, and ointments.</p>	
<i>New and Innovative Aspects:</i>	
<p>This concept is tailored to the needs of small producers, indigenous communities, and even large corporations. The multifunctional equipment is extremely versatile and can be utilized to produce a wide variety of products at low operational costs. It is possible to handle raw material in various forms, including solid, liquid, viscous, and/or paste.</p>	
TECHNICAL CHARACTERISTICS:	
<p>The multifunctional equipment for obtaining plant extracts is comprised of: A main reactor to hold the raw material or solvents for the specific extraction process; said reactor has a steam diffuser in the lower internal area to feed steam from water or</p>	

solvents to the raw material that is utilized in the extraction process and in the upper internal area of the equipment there is a liquid solvents distributor to recirculate the solvent within the reactor; a swan neck hose connecting the reactor to the upper part of a lentil expansion condenser and submerged coil to bring steam, in order to make condensation which is received by a density separator. At the top of the reactor can be found: An extension tube that leads to a conical base attaching it to a column containing the raw or packed material by means of a false bottom; a vertical condenser coil that is attached to another shell-and-tube condenser, where in the former the condensation is partially created and in the latter the condensation is completed and the solvent is separated for each extraction process performed by this equipment; a water pipe to cool the condenser coils and tubes; and a holding tank which receives the condensates from the extraction process being carried out.

Main advantages derived from its utilization:

- This equipment is extremely versatile with respect to the different extraction operations it can perform, including distillation, evaporation, maceration, and deodorization.
- It can be used to obtain a variety of products including ointments, salves, liniments, oleoresins, distillates, and concentrated pastes.
- The raw material to be handled can be in solid, liquid, viscous, and/or paste form.
- Low operational costs.

Applications:

- Food industry, cosmetics, traditional medicine, patent medicine

INTELLECTUAL PROPERTY

- Patent granted in 2010, valid until 2022

ABOUT THE OFFERING ORGANIZATION

<i>Presentation:</i>	El Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C. (CIATEJ) is a public research center that belongs to the national technology development and innovation network, the National Council for Science and Technology (CONACyT). CIATEJ is focused on the agricultural, food, health, and environmental sectors with an emphasis on the application of innovative biotechnology.
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