

<b>MICRO-SPRAY DRYING PROCESS AND PREPARATION OF HESPERIDIN/CYCLODEXTRIN INCLUSION COMPLEX</b>	
<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>	Commercial Concept Tests
<i>Desired Relationship:</i>	<ul style="list-style-type: none"> <li>– Technological research and development financing (technological partner)</li> <li>– Specialized application tests</li> <li>– Creation of a new company (Joint Venture) for the commercialization of the products outlined herein</li> <li>– Licensing of patents</li> </ul>
<i>Sector:</i>	Food
<i>Area of knowledge:</i>	Food Technology
<i>Key words:</i>	Hesperidin , cyclodextrin, micro-spray drying , flavonoids
<b>DETAILED DESCRIPTION:</b>	
<i>Problem to be solved:</i>	
<p>Flavonoids have long been used as wool dyes and are currently used to preserve fats and fruit juices owing to the antioxidant properties of some polihidroxi flavonas. Their pharmacological activity is extensive and varied; they are well known for their roles as aids in capillary fragility, coronary dilators, spasmolytics, in highlighting the antimicrobial activity of prenylated flavonoids and other phenols and in the fungitoxic activity of isoflavones.</p>	
<i>Solution:</i>	
<p>The present invention refers to a method to increase the solubility of flavonoids such as hesperidin (HES) by increasing its thermal stability and decreasing its photosensitivity in order to be used in food and beverage supplements with an acidic pH.</p>	
<i>New and Innovative Aspects:</i>	
<p>The inclusion complex obtained possesses better antioxidant and microbicide properties, and has increased solubility versus unencapsulated hesperidin, thus allowing this complex (Hesperidin/Cyclodextrin) to be added to citrus drinks to improve their nutraceutical properties without affecting their palatability.</p>	
<b>TECHNICAL CHARACTERISTICS:</b>	

The process for obtaining the product of the present invention consists of the following steps:

1. Dissolve HES in a CDx solution.
2. Remove the undissolved or precipitated particles to generate the spray solution.
3. Feed the spray solution into a micro-spray drying system using hot air and a pressure pump to form micro-droplets.
4. Perform the drying of the micro-drops in the drying chamber to instantly form solid particles.
5. Retrieve dust particles, which result in crystalline particles of the Hesperidin/CDx inclusion complex.

*Main advantages derived from its utilization:*

- During the process the Hesperidin crystallizes and becomes stable against temperature and light.
- The process is applicable to pilot- and commercial-scale manufacturing.
- The inclusion complex obtained possesses better antioxidant and microbicide properties, and increased solubility versus unencapsulated hesperidin, thus allowing this complex (Hesperidin/Cyclodextrin) to be added to citrus drinks to improve nutraceutical properties without affecting their palatability.

*Applications:*

- Food and beverages

#### **INTELLECTUAL PROPERTY**

- Patent filed in 2014
- MX/a/2014/015444

#### **ABOUT THE OFFERING ORGANIZATION**

*Presentation:*

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.

*Contact Information:*

Mtro. Evaristo Urzúa Esteva - [eurzua@ciatej.net.mx](mailto:eurzua@ciatej.net.mx)