Europe seeks alternatives to natural latex from Asia

January 29 2010

Some natural latexes are the main ingredient in the extraction of natural rubber, an indispensable raw material for all kinds of industries and essential for the manufacture of surgical gloves, condoms or tyres. All the latex used in Europe is imported, extracted fundamentally from the the *Hevea brasiliensis* tree.

The largest producers in the world are Malaysia, Indonesia and Thailand, three Asian countries that have practically the worldwide monopoly of this resource. In order to find alternatives to this commercial dependence and promote the cultivation of latex-producing plant species in the European Union, within the VII Framework Programme, a research project is being undertaken in which twelve technological centres, universities and companies related to this matter are taking part.

The Basque Neiker-Tecnalia technological centre is part of this consortium and its function is to carry out research into, amongst other matters, the genotype and the possibilities of introducing into Europe the two plant species to substitute imported natural latex: the guayule bush (*Parthenium argentatum*) and the Russian dandelion (*Taraxacum kok-saghyz*). Guayule is considered to be the most promising crop for Mediterranean zones while the Russian dandelion turns out to be more suitable for northern and eastern Europe.

The technical performance and economic potential of rubber extracted from guayule and the Russian dandelion are being evaluated through the production of specific prototypes, such as for surgical gloves or tyres.

Likewise, the consortium anticipates the creation of a network of collaboration between European research and industrial organisations, to pool knowledge with scientists and government bodies so that Europe does not have to depend so much on imported natural latex.

This European project is studying the creation of a new germoplasm of both varieties, a study involving their biochemistry and genetics, genetic improvement, agronomy and the designing of concrete products from the resulting rubber. The genetic study of both plants will be used fundamentally to generate examples that produce greater quantities of latex and that will be commercially viable.

A unique biopolymer

Natural rubber is a unique biopolymer that cannot be substituted by synthetic alternatives in many of its most important applications, such as medical products, condoms, footwear or adhesives. This unique character has driven the European Union to take measures to avoid the latent risk of the producing countries deciding on a co-ordinated rise in the price-fixing of this raw material, as happened with petroleum in the seventies.

Within this project, various aspects of the Russian dandelion will be studied, such as its genome and possibilities of mutagenesis for improving the vigour and yield of the crop, as well as the size of its roots from where the natural latex is extracted. Likewise, the relevant genes involved in the production of latex and rubber will be identified.

Guayule is a crop that has been under study over the last few decades, especially in the U.S. with the goal of increasing the yield and production of its natural rubber. Nevertheless, greater optimisation of its agronomy and its varieties is still required, as well as the development of molecular tools for genetic improvement.

Besides the mentioned problem of the monopoly, world production of natural rubber, fundamentally linked to the *Hevea brasiliensis* tree, is in danger on a number of fronts. The rubber tree is particularly vulnerable to plagues and illnesses and its cultivation very dependant on quite specific climatic conditions, occurring mainly in the tropical zones of Asia and South America. Another fundamental problem with rubber produced from this tree is the allergy to latex that can be caused, an ailment that can be avoided with latex from guayule or the Russian dandelion. Another threat is the increase in the demand for natural rubber in the emerging countries, in a world context in which the supply of natural rubber is diminishing - a fact that has made its price double over the last two years.

Provided by Elhuyar Fundazioa