Australian Grass Key Ingredient for Ultra-Thin, Resistant Condoms

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A group of scientists from the University of Queensland (UQ) were inspired by the traditional Aboriginal practice of extracting the nanocellulose of Australia's spinifex grass.

The nanocellulose, researchers say, has the ideal qualities for condom production.

Not only is it the thinnest and strongest nanocellulose found to date, but "the structure of its cell walls provides flexibility," Nasim Amiralian, one of the researchers from UQ's Australian Institute of Bioengineering and Nanotechnology, told Efe.

The extraction process also consumes little energy meaning that production costs will be reduced, altogether making it an attractive choice in the growing market of additives to reinforce rubbers or gums.

"It's the holy grail for natural rubber," said fellow researcher Darren Martin.

The new additive has already been tested in the manufacture of latex in the U.S., where tests were conducted to see how much volume and pressure it could handle.

"On average, the condoms saw a performance increase of 20 percent in terms of pressure and 40 percent in volume compared to the control sample of commercial latex," the Australian expert said.

Scientists believe that they can continue to improve the product to produce a condom that is 30 percent thinner than existing products, while still meeting all necessary standards.

"Last year we managed to reduce the production to 45 microns in our first commercial test, which is roughly as thin as a strand of human hair," Martin said.

He added that in addition to achieving thinner condoms, which are as prophylactic as possible, the new material will allow condoms to be sold at a lower price as a smaller amount of latex is used to produce them.

Researchers say this could help to expand the use of condoms and strengthen the fight against HIV and other sexually transmitted diseases.

And the uses of the spinifex nanocellulose aren't limited to condom production.

The UQ scientists believe that it could also be used in the production of ultra-thin surgical gloves, improving touch sensitivity for surgeons and lessening hand fatigue.

"We are seriously committed to commercializing the spinifex nanocellulose technology as well as validating it for various commercial opportunities such as rubber catheters and other rubber materials, water filters and the precursor of renewable carbon fiber," said Amiralian.

The project recognizes the contribution of the traditional knowledge of indigenous Australians, and has signed an agreement with the Dugalunji Aboriginal Corporation to ensure that they have ongoing involvement and equity in the commercialization of the nanocellulose technology.

If the commercialization succeeds, it is also anticipated to lead to greater cultivation of the plant and contribute to the economy of remote desert areas in Australia, which are largely inhabited by indigenous communities

"The spinifex grass has largely been ignored as a sustainable resource despite its wide distribution throughout Australia and its unique biological features which have allowed it to evolve in harsh conditions," said Amiralian.