Nanofibers: tomorrows high-tech bandages [1]

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 [2]

Nanofibers, new medical biotechnology that heals

The diabetic ulcers are the primary cause for amputations in the World. Diabetics are prone to circulatory problems. When circulation is poor, the tissue in the extremities is not well oxygenated, allowing these areas to become more susceptible to wounds development. If the wound is not treated promptly the extremities have to be amputated.

At the University of Akron, OH, **Marcos López** [3], a Puerto Rican scientist and a member of CienciaPR, along with Daniel J. Smith (Chemistry) and Darrell Reneker (polymer sciences) developed a nanofiber bandage that releases micromolar quantities of nitric oxide. They made these bandages using an electrospinning technique, thereby creating a multilayered bandage that allows controlled release of nitric oxide.

Nitric oxide is a molecule important for the regulation of blood flow in the circulatory system. By applying the bandage to diabetic ulcers, the released nitric oxide stimulates the reestablishment of the circulation in the area, and thus, the flow of oxygen and nutrients that allow healing.

This biotechnological advance spurred by **Marcos López** [3] research has been so successful it **has been patented** [4], and is now in **phase 3 clinical trials** [5].

These bandages have been also used successfully in the treatment of *Leishmaniasis cutanea*, a tropical parasitic disease that affects millions of people worldwide, many in poor developing countries. **Marcos López** [3] research has provided new hope to both diabetic and Leishmaniasis patients worldwide.

The nanofibers production technique using electrospinning has diverse application that range from the production of textiles to tissue engineering. Fibers with diameters of less than one micrometer are formed when a droplet of a polymer solution is elongated with a strong electric field. With this technique, this research group has developed numerous systems to stabilize enzymes and proteins, create drug delivery system, coating of metal stents and balloons with embedded drugs, and even living cells.

If you are interested in learning more about the nanofibers bandages, electrospinning techniques and other aspects of Marcos LÛpez research, please visit **Marcos** [3]**López** [6] **profile**.

Tags:

- Marcos López [7]
- Nanotecnología [8]
- nanofibers [9]

Categorías de Contenido:

- Biological and health sciences [10]

Links
[1] https://www.cienciapr.org/en/monthly-story/nanofibers-tomorrows-high-tech-bandages?language=es [2] https://www.cienciapr.org/sites/cienciapr.org/files/field/image/nanofibers.jpg [3] https://www.cienciapr.org/en/user/marco4357?language=es [4] http://www.wipo.int/pctdb/en/fetch.jsp?LANG=ENG&DBSELECT=PCT&SERVER_TYPE=19&SORT=118KEY&TYPE_FIELD=256&IDB=0&IDOC=1203638&C=1&ELEMENT_SET=IA,WO,TTL-EN&RESULT=20&TOTAL=157&START=1&DISP=25&FORM=SEP-0/HITNUM,B-ENG,DP,MC,PA,ABSUM-ENG&SEARCH_IA=US2005043051&QUERY=%28PA%2fUniversity+AND+PA%2fof+AND+PA%2fAkron%29 [5] http://clinicaltrials.gov/ct/show/NCT00428727?order=2 [6] https://www.cienciapr.org/viewprofile.php?username=marco4357 [7] https://www.cienciapr.org/en/tags/marcos-lopez?language=es [8] https://www.cienciapr.org/en/tags/nanotecnologia?language=es [9] https://www.cienciapr.org/en/tags/nanofibers?language=es [10] https://www.cienciapr.org/en/categorias-de-contenido/biological-and-health-sciences-0?language=es