Consell supports the development of new masks and screens with natural additives that protect against viruses and bacteria

- The DOTMASK project explores new coatings and plastics obtained from botanical extracts applicable to personal protective equipment
- The company Lamberti coordinates the work team, in which Airnatech participates, ADM Biópolis, the plastic technology institute, Aimplas, and the IIS La Fe

The Generalitat Valenciana, through the Valencian Innovation Agency (AVI), finances the development of face masks and screens equipped with antimicrobial properties capable of preventing infections and infections by viruses and bacteria, even those resistant to drugs. To this end, new coatings and plastics obtained from botanical extracts that improve the attributes of current personal protective equipment (PPE) are being explored.

The initiative, baptized as DOTMASK, is one of the strategic projects in cooperation that has supported the Agency in the framework of its latest call for grants in competitive competition. It is coordinated by the chemical company Lamberti and has the participation of the Plastic Technology Institute, Aimplas; the Health Research Institute of the Hospital La Fe de València, the biotechnology firm ADM Biópolis and the manufacturer of masks Airnatech.

The development of materials with antibacterial and viricidal capacity responds to the need to reduce the incidence of infections caused by pathogens such as VOCID-19, which are often transmitted mainly by air.

Viruses and bacteria are particularly dangerous in hospital settings, where it is more common for these microorganisms to become resistant to drugs.

Until now, coatings designed as a passive protection measure used inorganic metal-based additives. However, this composition has some drawbacks, such as its propensity to corrosion in certain environments, or the possible release of active ions, which has opened a debate about its potential toxicity.

The substances extracted from plants maintain, on the other hand, these same bactericidal and viricidal properties, with the advantage that, being compounds of natural origin, they present a lower risk of side effects, allergies or toxicity, for both the user and the environment.

Precisely in this direction, the DOTMASK project is developing materials based on phenolic compounds of natural origin, whose antimicrobial activity has been proven very high, with the aim of integrating them into personal protective equipment (PPE). In this way, it is intended to achieve a highly effective protection against pathogens, achieving a significant reduction in the transmission of diseases.

Available to health and emergency personnel

The new antimicrobial coatings, developed from botanical extracts that have been obtained through biotechnology, will be applied both to textiles for the manufacture of masks, as plastic sheets with which facial protection screens will be manufactured. Two improved prevention systems, which will enhance the security of health and emergency services and expand protection options for the population in pandemic situations.

For the development of these biotechnological solutions, Lamberti, specialized in chemical coatings, has the support of ADM Biopolis, which will analyze the antimicrobial capabilities of these additives and undertake the mandatory toxicity tests. Aimplas and Airnatech will contribute, respectively, to the development of antimicrobial plastic materials and the incorporation of these new additives into the masks. The effectiveness of the compounds in a real healthcare environment will be tested at the Hospital La Fe in Valencia, thanks to the contribution of the IIS La Fe.

In this regard, the Executive Vice President of La Agència, Andrés García Reche, highlighted the importance of cooperation between the agents of the innovation system as a way to address major challenges such as, for example, protection against viruses and bacteria: "If something has shown us this pandemic is the need to innovate and consolidate a sound and creative healthcare sector, which not only gives us autonomy from manufacturers based abroad, but also, allow our companies to compete with big international firms".

"We have a great scientific and technological potential focused on health, which we must be able to transfer to our productive fabric. Strategic projects such as the present constitute a unique opportunity to move in this direction", he continued.

The project is aligned with the Intelligent Specialization Strategy of the Valencian Community, known as S3, coordinated by the Conselleria de Innovación, Universidades, Ciencia y Sociedad Digital, and which includes as one of the priority objectives the "health promotion and efficient health".

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Similarly, the initiative also connects with the conclusions of the Strategic Committee on Specialized Innovation (CEIE) in Emergencies, an advisory body of the AVI that guides innovation priorities in this area. In fact, specialists from the scientific community, technological institutes and the business community who are part of this multidisciplinary team specifically urge to improve the properties of personal protective equipment (EPIs)used by emergency teams.

In order to meet this challenge, AIMPLAS, Plastics Technology Centre, is developing the DOTMASK Project with funding from the Valencian Innovation Agency (AVI) and Fondos Feder. The project is being implemented by a consortium made up of AIMPLAS, the companies Lamberti, Airnatech and ADM

Biopolis, and the La Fe Hospital Health Research Institute. The goal of the project is to develop Personal Protective Equipment (EPIs) such as face masks and screens with viricidal, bactericidal and fungicidal capacity for fronte protection to the COVID epidemic-19 and the risk to healthcare-related infections (IRAS).