



**UNAM**

## **Technological Innovation Advances in health**

Through its various research institutes and centers, the **Universidad Nacional Autónoma de México** (also known as UNAM) generates important developments in the field of health. Among them **medical devices, anti-neoplastic, anti-hypertensive and anti-venom substances, excipients, controlled release delivery systems, anti-bodies, peptides, vaccines and active substances for veterinary use**. The UNAM research staff is frequently awarded sponsorships and prizes from the pharmaceutical including CANIFARMA and Dr. Jorge Rosenkranz for Medical Research (ROCHE), among others.

With the purpose of releasing new knowledge, technologies, products and services of social use the UNAM presents this catalog of **new developments with patent application or awarded a patent**. The National University conducts research and technology development in the field of health with the **aim of transferring them, therefore contributing to the welfare of Mexico**.



## ► Parkinson's Disease

- Silymarin as neuroprotective agent for the management of Parkinson's disease.
- Early diagnosis of Parkinson's disease.

## ► Nanoparticles

- Enzymatic nanoparticles for product activation in chemotherapy
- Method for the production of controlled release
- Formulation of silver nanoparticles and method for the treatment of materials used in the manufacturing of shoes for diabetic foot.

## ► Treatments for human infections

- Carbamic acid derivatives for the treatment of *Helicobacter pylori* infections.

## ► Oncology

- Use of adenosine aspartate for cancer treatment
- Molecular iodine compound for human use in the prevention and treatment of prostate pathologies
- Iodine and doxorubicin combination for chemoresistant cancer treatment
- New antineoplastic drugs: Casiopeínas®
- Composition of an antineoplastic and immunoregulator product for the treatment of cervix cancer
- Enzymatic nanoparticles for prodrug activation in chemotherapy
- Use of sodium caseinate as antineoplastic agent
- Piperazine-derived fatty acid amides with antineoplastic activity
- Use of phenethyl ester analogous compounds for the prevention and treatment of cancer
- Synthesis of novel phenol-derived-copper complexes with anti-neoplastic activity.

## ► Antifungal

- New amphotericin analogous compounds with antimycotic activity.

## ► Bone diseases

- A new process for obtaining hydroxyapatite from bone
- Biologically active peptide for bone repair and regeneration.

## ► Release methods

- Pharmacological system for oral delivery of sensitive therapeutics
- Chitosan and poloxamer transdermic patch
- Chitosan-based monolithic system with microneedles for transdermal application.

## ► Antivenoms

- Human antibody variants that recognize and neutralize the scorpion venom
- Single-chain human antibodies: a technology platform for the design and generation of new antibodies to detect and neutralize specific antigen targets
- Recombinant antibody fragments from human origin capable of neutralizing Mexican scorpion venoms.

### ▶ **Biomarkers for diagnosis**

- Purification and use of antibodies for the diagnosis of *Entamoeba*
- Biomarker for detection of acute kidney injury
- Analytical method for the differential quantification of multimeric viral proteic structures
- Molecular biomarkers for cervicouterine cancer detection
- *In vitro* test for fibrotic liver disease diagnosis.

### ▶ **Immunopotentiating**

- Use of GK-1 peptide for the manufacture of drugs for increasing the efficiency of the immune response.

### ▶ **Immunomodulators**

- Immunomodulatory properties of scorpion toxins.

### ▶ **Veterinary products**

- Novel soluble benzimidazole-derivative compounds for the treatment of Fasciolosis
- New fast method to detect respiratory infections in pigs
- Process to elaborate an immunogen toxoid from *Actinobacillus pleuropneumonia* for the prevention of contagious swine pleuropneumoniae
- New monoclonal antibodies against a receptor from chicken dendritic cells
- Carbamic acid derivatives as antiparasitic drugs
- Emulgel of ivermectin for veterinary use as a promoter and bioadhesive system in antiparasitic treatment and method for obtaining thereof
- Bovine gynecological test simulator for the estrous cycle diagnosis
- Production and use of recombinant antigens as vaccines against *Cysticercosis teniasis*

### ▶ **Coatings**

- Pharmaceutical coating from solid lipidic nanoparticles and polymers.

### ▶ **Principles for vaccine development**

- Intranasal vaccine against enterotoxigenic *Escherichia coli*
- New oral delivery system for vaccines and therapeutic proteins.

### ▶ **Technology for stabilizing protein**

- Technology for the purification and stabilization of recombinant proteins.

### ▶ **Antihypertensive**

- New phenol-derived methylthiomorpholinic compounds for treatment of cardiovascular diseases.

### ▶ **Antiretrovirals**

- Adenosine pharmaceutical formulations in combination with antiretrovirals for hepatic damage treatment.

## ► Natural extracts

- *Sargassum buxifolium* extract for the treatment cervical cancer
- Cactus mucilage *Opuntia ficus indica* as vehicle for controlled release and gastrointestinal tract tissue regenerator
- Method for the isolation and synthesis of a compound from *Casimiroa pubescens* and its use as an anti-depressant vegetal
- Compositions including extracts of *Sechium chinatlense* and *Sechium compositum* and their use as antineoplasics
- Extraction method of a compound from *Verbesina persicifolia* and its use as an anti-diabetic drug.

## ► Excipients

- Method for the production of controlled release microspheres prepared by porous microspheres and nanoparticles assembling
- Method for obtaining a pharmaceutical coprocessed excipient for controlled release of active substances and the product obtained therefrom.

## ► Cytoprotective

- Ftalid compounds and their use as gastric mucosa cytoprotectors.

## ► Medical devices

- Biocompatible polyurethane-based material for prolonged release of drugs
- Bioinspired antifungal systems
- Method for determining the content of cholesterol in blood from measures of the arterial pressure
- Portable opto-electronic device for detecting and measuring uv radiation in order to prevent skin cancer
- Ophthalmological device for controlling the quality of corneal tissue for transplants
- Atrial splitter of a single valva for cardiac valves surgery
- Ortoprothetic hand replacement
- Prosthetic finger with hexacicloidal mechanism
- Geriatric chair
- Self adjusting socket for lower limb prosthesis
- Adjustable socket for upper member prosthesis
- Sternal dissection elevator for internal thoracic artery and inferior epigastric.

## ► Peptides

- New analgesic peptide from *Brachypelma verdezy* spider
- Use of recombinant and synthetic peptides against *Mycobacterium tuberculosis* and other pathogenic bacteria
- Recombinant peptide with anti-inflammatory effect
- New antibiotic peptides
- Peptides obtained from scorpion venom for the blockage of channels related to immunologic diseases.

## ► Antibodies

- Use of human antibodies for the neutralization of various antigens.

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