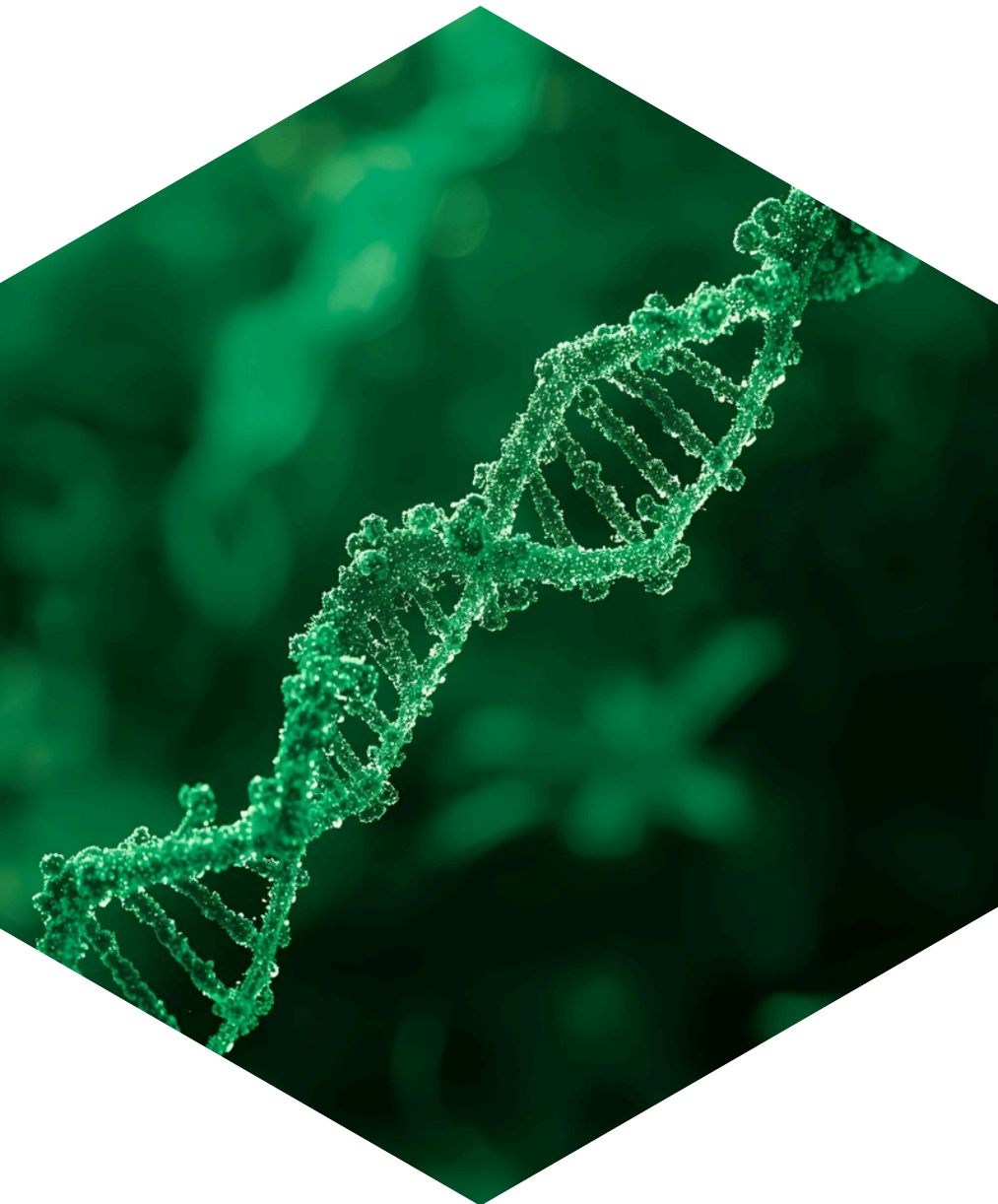


DOSSIER TECHNOLOGY TRANSFER

Innovation and Transfer Unit



BIOTECHNOLOGY

FIBICO – USE OF OLIVE OIL IN THE PREVENTION AND TREATMENT OF DISEASES WHICH CAN CAUSE AN ISCHEMIC PROCESS.

Abstract

A research group from the Andalusian Public Health System (SSPA) has developed a composition based on olive oil to be used for the relief, improvement, prevention and/or treatment of diseases which cause ischemic processes such as the prevention of pressure ulcers.

Description

Ischemia is characterized by a tissue suffering caused by arterial insufficiency. Among the different ischemic processes we find the pressure ulcers, vascular ulcers and neuropathic diabetic foot ulcers.

These conditions constitute a health problem of first level, which is exacerbated by the progression of diabetes (18-20% of the population) and population aging. Treatment requires daily involvement of health personnel and dependents of patients to prevent the occurrence of infectious processes that can lead to amputation and, in the worst case, to death.

To date, there are a variety of therapeutic alternatives for the treatment of ulcers, mainly based on the application of different types of dressings or sprays that bring healing hyperoxygenated fatty acids.

In general, these products have a high cost. There are studies that suggest that the cost of treating ulcers can reach up to 5% of total health spending.

For all these reasons, the research group has developed an alternative composition which allows dealing with the same or better effectiveness these pathologies. So far, studies have been conducted with more than 100 patients.

Advantages

1. Lower cost compared to other similar treatments.
2. Safety during and after topical application.
3. Lower incidence of pressure ulcers during treatment.
4. Reduces the risk of bacterial contamination.
5. Antioxidant power. Low in peroxides to alternative treatments.
6. Maximum use of the product due to the design of its packaging.
7. Streamline the work of medical staff due to its easy way to use.

Industrial/ Intellectual Protection

This technology is protected by patent.

Objectives

The group is looking for a partner interested in a license and/or a collaboration agreement to further develop and exploit this innovative technology

Classification

Activity/Type: Cosmetics

Pathology: Dermatology

Representative Institution and Inventor

The main researcher behind the innovation is Antonio Díaz Valenzuela, Family and Community Care nurse in the Estepa Clinical Management Unit.

The development of the project has been possible thanks to the collaboration of researchers from the Public Health Business Agency Alto Guadalquivir Hospital and the Andalusian Health Service

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FIBICO –COMPOUNDS FOR THE TREATMENT OF HEPATOCELLULAR CARCINOMA

Abstract

A research group from the Andalusian Public Health System (SSPA) has demonstrated the usefulness of new compounds for the treatment of hepatocellular carcinoma.

Description

Liver cancer (HC) and specifically hepatocellular carcinoma (HCC) (75-85% of CH cases) is the sixth most prevalent type of cancer and the third leading cause of cancer-associated death due to its high rate of progression tumor and metastasis

Treatment, depending on the stage of the disease, from early to advanced stages, includes surgical resection or liver transplantation, chemoembolization or radioembolization, and angiogenic inhibitor treatments such as sorafenib, regorafenib, and sunitinib.

The inventors observed that SF3B1 expression was consistently elevated (RNA/protein) in HCC versus control tissues in all cohorts studied. SF3B1 expression was associated with histological features of tumor aggressiveness, with the expression of oncogenic splicing variants (KLF6-SV1, BCL-XL) and with decreased overall survival

In vitro silencing of SF3B1 reduced the proliferation and migration ability of HCC cell lines. In addition, a pharmacological inhibitor of SF3B1, pladienolide-B, demonstrated a strong ability to reduce proliferation, migration, and colony formation in HCC cells, while its effects on non-tumor cell proliferation were minimal. In addition, in preclinical models, intratumoral administration of pladienolide-B reduced the in vivo growth of xenograft tumors.

In vitro and in vivo silencing or blocking of SF3B1 significantly modulated the expression of cancer-associated genes (CDK4, CD24) and oncogenic splicing variants (KLF6-SV1).

Conclusion: SF3B1 is overexpressed in HCC, and its genetic or pharmacological inhibition may represent a new therapeutic strategy.

Advantages

1. SF3B1 could serve as a therapeutic target in HCC.
2. Silencing of gene expression reduces relevant functional parameters.
3. Pladienolide-B is capable of reducing the aggressiveness of HCC cell lines in vitro.
4. Pladienolide-B also reduces tumor progression in a preclinical model.
5. The effect of Pladienolide-B has much less cytotoxicity on normal cells..

Industrial/ Intellectual Protection

This technology is protected by patent in National Phases of Europe and USA

Objetives

Seek a collaboration that leads to the commercial exploitation of the invention presented. The terms and conditions of the license agreement can be discussed openly if the technology presented is of interest

Clasification

Activity/Type: Medicine

Pathology: Liver Cancer and Hepatocarcinoma

Representative Institution and Inventor

The main researcher behind the innovation is Manuel D. Gahete Ortiz, professor at the University of Córdoba.

The development of the project has been possible thanks to the collaboration of researchers from the University of Córdoba and the Andalusian Health Service

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FIBICO – The use of MUC13 and TFF1 as new targets for developing therapeutic solutions in Pseudomyxoma Peritonei.

Abstract

A research group from the Andalusian Public Health System (SSPA) has developed an invention within the field of biotechnology and molecular diagnostics consisting of a protocol to isolate proteins from the malignant Pseudomyxoma peritonei (PMP) tumor for use in the development of new therapeutic targets.

Offer description

PMP is a rare malignant tumor whose molecular mechanisms are unknown. It's characterized by the progressive accumulation of mucin and secretion of tumor cells within the abdomen and pelvis. Cytoreductive surgery combined with Hyperthermic Intraperitoneal Chemotherapy is the only therapeutic option. In addition, recurrence with a fatal end is common. The lack of information about molecular mechanisms is mainly due to the physicochemical characteristics of mucin, which has been designed to protect the epithelial cells.

We describe here the first protocol to break this barrier and isolate proteins from soft and hard PMP mucins. This approach is based on glycoproteins, immunoglobins and albumins depletion by affinity liquid chromatography, and it makes the mucin able for free-label mass spectrometry.

Our protocol releases a mix of total proteins like non-mucinous tissue. It's allowed us to get the first protein profile in mucinous tumours, where Protein-Protein interactions networks and pathway enrichment analyses revealed MUC13 and TFF1 as potential therapeutic targets.

Once MUC13 and TFF1 have been validated as therapeutic targets, the following industrial applications are proposed:

1.- Development of immunotherapies that use MUC13 as a specific target of tumor cells that remain after surgery.

2.- Development of intraperitoneal TFF1 synthesis inhibitors to prevent the production of solid mucin and allow the suction of liquid mucin in patients with recurrence

Offer advantages

-The discovery of new therapeutic targets for this type of tumor will provide the first specific treatment and will improve the life expectancy of patients

Industrial/intellectual protection

This technology is protected by patent application in Europe and EEUU.

Objective of the collaboration

Search a collaboration that leads to the commercial exploitation of the invention presented. The terms and conditions of the license agreement can be openly discussed if the technology presented is of interest.

Classification

Activity/Type: Biotechnology and molecular diagnostics.

Patology: Pseudomyxoma peritonei.

Representative Institution and Inventor

The main investigator behind the innovation is Antonio Romero Ruiz and Álvaro Arjona Sánchez, researchers of the GE09 Research group in peritoneal and retroperitoneal oncological surgery.

The development of the project has been possible thanks to the Andalusian Health Service and the University of Córdoba

Contact of Institution

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FIBICO – Biomarkers of response to bariatric surgery

Abstract

A research group from the Andalusian Public Health System (SSPA) has identified a series of biomarkers to predict the response of subjects undergoing bariatric surgery.

Description

Bariatric surgery is currently the most effective treatment for the long-term management of severe obesity and metabolic syndrome, over other therapies (diet, lifestyle changes, exercise, pharmacological therapies) that have high recurrence rates with insufficient weight loss and insufficient improvement in associated metabolic comorbidities.

The object of the present invention is to establish the pre-operative status of subjects for predicting response to bariatric surgery for weight loss and improvement of associated comorbidities.

To this end, a panel of molecular biomarkers has been identified that define the status of subcutaneous adipose tissue, which is associated with a better response to bariatric surgery. Similarly, the level of oxidised LDL expression has been identified as a surrogate plasma marker that also allows prediction of an individual's response to bariatric surgery.

Advantages

1. Control of body weight loss and improve associated metabolic comorbidities, mainly lipid and glucose metabolism.
2. Reduce the risk of unnecessary complications of the intervention.
3. Establish personalised guidelines to help monitor individual progress.

Industrial/ intellectual protection

This technology is protected by international patent (PCT).

Objective of the Collaboration

Seek a collaboration that leads to the commercial exploitation of the invention presented. The terms and conditions of the license agreement can be discussed openly if the technology presented is of interest.

Clasification

Activity/Type: Endocrinology
Pathology: Bariatric Surgery

Representative Institution and Inventor

The principal researcher behind the innovation is Rocío Guzmán Ruiz, of group GC11 Adipocyte metabolism and differentiation. Metabolic syndrome.

The development of the project has been possible thanks to the Andalusian Health Service and the University of Cordoba.

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FIBICO – Panel de microARNs como biomarcadores de vitíligo no segmentario.

Resumen de la Oferta

Un grupo de investigación del Sistema Sanitario Público de Andalucía (SSPA) ha desarrollado una invención para el uso de microARNs en el diagnóstico y pronóstico del vitíligo no segmentario.

Descripción de la oferta

El vitíligo no segmentario es una enfermedad inflamatoria inmunomediada que provoca la apoptosis de los melanocitos y la consecuente pérdida de la pigmentación cutánea de la zona dañada. Con una prevalencia del 0,5-2%, se estima que en España hay unas 900.000 personas afectadas.

Conlleva una importante disminución de la calidad de vida debido a la alteración de la propia imagen corporal y a que con frecuencia se asocia a otras enfermedades inmunomediadas.

Aún no existen tratamientos específicamente dirigidos disponibles en la práctica clínica con suficiente eficacia y seguridad.

Recientemente hemos identificado un grupo de 90 micro RNAs (miRNAs) cuya expresión está disminuída en tejido y plasma en comparación con personas sanas. Estas diferencias conllevan una disregulación de rutas inmunológicas y metabólicas previamente relacionadas con la enfermedad, por lo que estos miRNAs podrían ser un buen marcador de las severidad y pronóstico de la enfermedad así como de monitorización de la respuesta terapéutica mucho antes de que se produzca la repigmentación. La presente propuesta se basa en dicho conocimiento.

Es decir, implica la aplicación y transferencia a una herramienta tecnológica de un modelo predictivo previamente obtenido, el cual se basa en la determinación de los niveles en piel o en plasma de 6 miRNAs. Finalizado el proyecto se espera que se obtenga el prototipo validado en el laboratorio.

Ventajas de la oferta

- Es un método objetivo y reproducible frente a las escalas actuales basadas en imágenes o fotografías.
- El método de la invención puede también ser empleado como predictor molecular de la respuesta terapéutica a diferentes tratamientos contra el vitíligo no segmentario en función de su capacidad para revertir el estado de disregulación de la expresión de los miARNs

Protección Industrial/Intelectual

Esta tecnología está protegida mediante patente nacional.

Objetivo de la colaboración

Buscar una colaboración que conduzca a la explotación comercial de la invención presentada. Los términos y las condiciones del acuerdo de licencia se pueden discutir abiertamente si la tecnología presentada es de interés.

Clasificación

Actividad/Tipo: Dermatología
Patología: Vitíligo no segmentario

Institución Representante e Inventor

El investigador principal tras la innovación es Juan Alberto Ruano Ruiz, investigador del grupo GC29 Enfermedades inflamatorias cutáneas inmunomediadas.

El desarrollo del proyecto ha sido posible gracias al Servicio Andaluz de Salud y la Universidad de Granada.

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FIBICO– New method of predicting severe alopecia areata using MicroRNAs

Abstract

A research group from the Andalusian Public Health System (SSPA) has identified a series of molecular markers (microRNA) for the early diagnosis of severe alopecia using a predictive model.

Description

Currently there are topical treatments that allow to stop most of the milder forms of alopecia. However, some patients may develop more extensive and severe forms, for which, at the moment, only experimental treatments exist.

For this reason, a predictive model has been created that works using 19 microRNAs, contained in peripheral blood, whose expression is lower in patients with severe alopecia areata. The differences in the expression of this group of microRNAs result in a deregulation of various immunological and metabolic pathways related to the severity of the disease. This makes it possible to know in advance which patients are more likely to suffer from this disease, and through the use of early therapies, check if evolution to a more serious stage can be avoided.

The method of the invention can also be used as a molecular predictor of the therapeutic response to different treatments against alopecia areata. Thanks to the proposed microRNAs, and their differential expression in patients with mild and severe alopecia areata, it is possible to carry out an assessment and repositioning of drugs capable of reversing this state of dysregulation.

Likewise, it is intended to use this model for the creation of a kit or device that uses the levels of microRNAs obtained from peripheral blood samples for the prediction of the possible change of the disease to severe alopecia.

Advantages

1. Anticipation of treatment: potential patients with severe alopecia can be treated prematurely to prevent the disease from progressing to this point.
2. Simple sampling: it requires the analysis of a peripheral blood sample, so it is minimally invasive, unlike current methods that require a skin biopsy.

Industrial/ Intellectual protection

This technology is protected by patent application in Europe and EEUU.

Objective of the Collaboration

Seek a collaboration that leads to the commercial exploitation of the invention presented. The terms and conditions of the license agreement can be openly discussed if the technology presented is of interest

Clasificación

Activity/Type: Dermatology
Pathology: severe alopecia areata

Representative Institution and Inventor

The principal investigator behind the innovation is Juan Alberto Ruano Ruiz, a researcher in the GC29 group Immune-mediated skin inflammatory diseases.

The development of the project has been possible thanks to the Andalusian Health Service and the University of Granada.

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FIBICO – Aminoacyl-tRNA synthetases as prognostic biomarkers for hepatocellular carcinoma.

Summary

A research group from the Andalusian Public Health System (SSPA) has identified a set of biomarkers to predict tumor recurrence in patients with hepatocellular carcinoma (HCC).

Through proteomic analysis of disease-related cellular environments, two tumor subgroups were identified, one of which is more aggressive due to dysregulation in ARSs.

Characterization of ARSs provides a quantitative and reproducible molecular measure for estimating the prognosis of HCC patients undergoing hepatic resection, transplantation, or biopsy as recommended by clinical practice. Incorporating measurements from these panels allows refining the prognosis estimation for HCC.

Description

The term liver cancer encompasses a group of pathologies that often result in poor prognoses. Among them, the most common type of liver cancer is hepatocellular carcinoma.

One of the main problems associated with poor outcomes in this disease is frequent tumor recurrence. It is estimated that the risk of recurrence within five years after tumor resection, even with adjuvant therapy, is 50–70%, and 10–15% in transplanted patients, with tumor recurrence being the leading cause of death in this population.

The invention focuses on components of the ARSs system (aminoacyl-tRNA synthetases) as biomarkers.

Specifically, genomic alterations/mutations in at least one gene of this family and/or general overexpression at the mRNA level and/or an overall increase in protein abundance define a subgroup of patients with lower survival and higher recurrence.

Currently, measurements are performed through determination of alpha-fetoprotein levels and tumor assessments.

This invention aims to refine therapeutic monitoring of patients to achieve improved prognostic outcomes.

Advantages

1. Improvement in monitoring and prognosis of HCC patients compared to traditional methods.
2. Tumor classification that opens the door to new targeted treatments.

Industrial/Intellectual Property Protection

This technology is protected by a patent currently in the national application phase..

Collaboration Objective

The objective is to seek a collaboration that leads to the commercial exploitation of the presented invention.

Classification

Activity/Type: Biotechnology and Molecular Diagnostics

Area: Oncology

Representative Institution and Inventor

The principal investigator behind the innovation is Manuel David Gahete, a researcher affiliated with GC30 Molecular Hepatology.

The project's development has been made possible thanks to the Andalusian Health Service and the University of Córdoba.

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FIBICO – Metal-organic frameworks (MOFs) functionalised with perfluorinated ligands for the adsorption of uraemic toxins.

Summary

A research group from the Andalusian Public Health System (SSPA) has developed a material capable of capturing uraemic toxins present in patients with chronic kidney disease (CKD). These toxins circulate in the bloodstream and, although they are eliminated through processes such as dialysis, high efficiency is not achieved, meaning that a residual concentration remains.

Description

A material composed of fluorinated NU-1000 particles has been developed, designed for the removal of uraemic toxins that cannot be efficiently removed by conventional haemodialysis.

This material has submicrometric particles, allowing it to be integrated into cartridges or directly into dialysis membranes. Its high adsorption capacity, combined with the action of fluorine atoms, facilitates the displacement of toxins bound to albumin to the free fraction, improving their removal. In addition, the particles show high chemical stability, which makes them reusable.

Low molecular weight uraemic toxins are mostly bound to plasma proteins, which makes their removal difficult using conventional methods. The incorporation of fluorinated NU-1000 overcomes this limitation, significantly increasing the effectiveness of the dialysis process compared to current technologies. Translated with DeepL.com (free version)

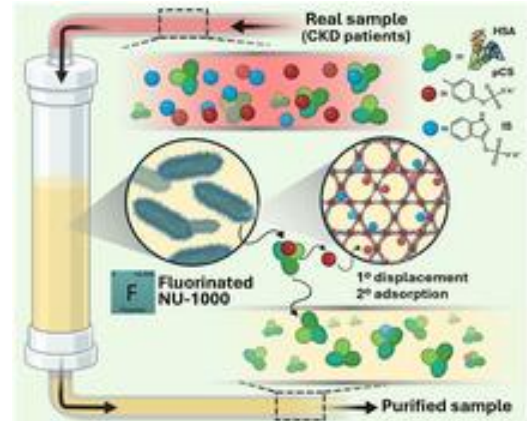


Figura 1. Guerrero F, Moscoso FG, Silvestre-Albero J, Martín-Malo A, Carrillo-Carrión C. Fluorinated Zirconium-Based Metal-Organic Frameworks as Novel Sorbents to Improve the Efficacy of Hemodialysis Treatment. *Small Sci.* 2025 May 8;5(7):2500054. doi: 10.1002/smssc.202500054. PMID: 40666039; PMCID: PMC12257890.

Advantages

1. This invention offers a combination of greater adsorption efficiency, selective removal, and improved biocompatibility compared to traditional adsorbent cartridges used in haemodialysis.
2. Consequently, the improvement in the haemodialysis process translates into improved clinical care for patients and a more effective process for removing protein-bound uraemic toxins.

Intellectual Property Protection

This product has a national patent registered with the patent office.

Collaboration Objective

The objective is to seek collaboration that will lead to the commercial exploitation of the invention presented.

Classification

Activity/Type: Materials and devices

Area: Renal

Representative Institution and Inventor

The principal investigator behind the innovation is Fátima Guerrero Pavon, a researcher belonging to the GC07 Nephrology: Cellular Damage in Chronic Inflammation group.

The development of the project has been made possible thanks to the Andalusian Health Service, the University of Córdoba, and the Spanish National Research Council.

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FIBICO – IN VITRO METHOD FOR PREDICTING THE RISK OF CARDIOVASCULAR DISEASE OR FOR DIAGNOSING CARDIOVASCULAR DISEASE IN PATIENTS WITH AN INFECTIOUS DISEASE.

Abstract

A research group from the Andalusian Public Health System (SSPA) has developed an in vitro method to predict the risk or diagnosis of cardiovascular disease in patients with infection. The method is based on determining the level of expression of the FGF-23 protein using a reagent kit designed for this analysis.

Description

In 2017, a OMS resolution declared sepsis a global public health priority. In Spain, some 50,000 people die each year as a result of sepsis, with a mortality rate of 40%.

Sepsis can be caused by infections such as community-acquired pneumonia (CAP), among others. The studies reviewed found an increased risk of cardiovascular disease (CVD) in patients with both conditions.

A multicentre study of patients hospitalised for CAP observed an overall rate of in-hospital CVD of 32.2%, with the most frequent causes being heart failure (23.8%), atrial fibrillation (9.2%) and myocardial infarction (8%). The 30-day mortality rate was significantly higher in patients who developed CVD (17.6% versus 4.5%, $p < 0.001$).

The invention worked to identify biomarkers that would allow the development of highly accurate predictive models that, upon admission, would be prognostic of adverse cardiovascular events (MACE) in patients with ACS. Translated with DeepL.com (free version)

There is an unmet medical need to find strategies capable of predicting the risk of cardiovascular disease, or for the diagnosis of cardiovascular disease, in patients with infectious disease, particularly in patients with CAP. The establishment of a highly specific biochemical marker is therefore very important in order to better identify patients who may develop a MACE after hospitalisation and who may require specific treatment and/or monitoring, which is the basis of the concept of personalised medicine.

Advantages

1. Improved clinical management of patients thanks to the information generated.
2. Increased discrimination between patients with MACE thanks to the specificity of the marker.
3. Improved decision-making once the patient is admitted to hospital.

Industrial/ intellectual protection

This product currently holds a national patent.

Objective of the Collaboration

The objective is to seek collaboration that will lead to the commercial exploitation of the invention presented.

Clasificación

Activity/Type: Biotechnology and Molecular Diagnostics
Area: Cardiovascular

Representative Institution and Inventor

The principal investigator is Carlos Pérez Sánchez, a member of the GC05 group on chronic systemic autoimmune-inflammatory diseases of the musculoskeletal system and connective tissue.

The project has been made possible thanks to the Andalusian Health Service, the University of Córdoba, the Murcia Health Service, the University of Murcia and the IIS La Fe.

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FIBICO – Method to sensitize GSNOR-deficient colorectal tumors to immunotherapy

Summary

A research group from the Andalusian Public Health System (SSPA) has developed an innovative therapeutic approach targeting tumors deficient in the enzyme S-nitrosogluthione reductase (GSNOR). This enzyme is involved in the removal of nitrosyl groups from cellular proteins, and its absence causes tumor cells to increase their dependence on glycolysis, while also creating a microenvironment that evades the immune system and makes them resistant to immunotherapy. The invention proposes a therapeutic strategy for this tumor subgroup by combining glycolysis inhibitors with autophagy modulators. Due to their high glycolytic dependence, these tumors are particularly sensitive to this combination.

Description

Colorectal cancer (CRC) is the third most diagnosed type of tumor and the second leading cause of cancer-related death worldwide. Despite advances in molecular biology and the development of targeted therapies, the high heterogeneity of these tumors limits the effectiveness of current treatments. Immunotherapy, based on immune checkpoint inhibitors (ICI), has emerged as a promising approach by enhancing the immune system's ability to eliminate malignant cells. However, resistance to these therapies remains a significant clinical challenge.

Recent research has identified a subgroup of CRC tumors deficient in the enzyme S-nitrosogluthione reductase (GSNOR), which has been suggested to have a tumor suppressor role. These tumor cells show a marked dependence on glycolysis and create a microenvironment that evades immune system activity, making them resistant to conventional immunotherapy. This specific metabolic vulnerability represents a unique therapeutic opportunity.

The present invention proposes a therapeutic strategy targeting this subgroup of GSNOR-deficient tumors by combining glycolysis inhibitors with autophagy modulators.

This approach not only exploits the glycolytic dependence of tumor cells but also has the potential to reverse resistance to immunotherapy, offering a personalized and more effective option for CRC patients.

This solution represents a technological innovation with high clinical and commercial value, by identifying and treating a subgroup of patients with unmet needs and by opening the door to combination therapies that optimize the immune response against the tumor.

Advantages

- 1. Personalized treatment:** Targeted at GSNOR-deficient tumors with a specific metabolic profile
- 2. Overcomes resistance:** Targets metabolic and microenvironmental vulnerabilities that limit immunotherapy
- 3. Enhances immunotherapy:** Improves immune response and the effectiveness of combination treatments

Industrial/Intellectual Property Protection

This technology is protected by a patent currently in the national application phase.

Collaboration Objective

Develop and bring the presented invention to market, facilitating its commercial exploitation and integration into new therapies targeting GSNOR-deficient tumors and colorectal cancer.

Classification

Activity/Type: Drug – Pharma

Area: Oncology

Representative Institution and Inventor

The principal investigator behind the innovation is Antonio Rodríguez Ariza, a researcher affiliated with GC06 New Therapies in Cancer.

The project's development has been made possible thanks to the Andalusian Health Service and the University of Córdoba.

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FIBICO – Aminoacyl-tRNA synthetase inhibitors for the treatment of hepatocellular carcinoma

Summary

A research group from the Andalusian Public Health System (SSPA) has identified a new therapeutic target for the treatment of hepatocellular carcinoma (HCC). From a previous study, a set of proteins that were deregulated in this pathology and associated with greater tumor aggressiveness were identified. Inhibition of these proteins resulted in improved tumor behavior.

Description

HCC is a highly frequent and aggressive tumor pathology that requires the identification and development of new therapeutic alternatives due to pharmacological resistance in some patients.

The research identified a family of 20 proteins, the aminoacyl-tRNA synthetases (ARSs), deregulated in HCC. Higher levels of these proteins in tumor cells are associated with greater tumor aggressiveness. Therefore, their inhibition is proposed as a treatment for this pathology.

Inhibition of some of these proteins results in a reduction of tumor aggressiveness parameters in HCC cell models, particularly those related to tumor establishment and cancer stem cell characteristics.

The efficacy of targeted therapies against this protein family was demonstrated, especially concerning the more resistant tumor populations associated with drug resistance, recurrence, metastasis, and other clinical events.

The proposed inhibitory agent is not limited solely to acting as an antagonist/inhibitor of this protein family as a therapeutic method. It may also refer to a pharmaceutical composition that includes this compound in combination with other pharmaceutical formulations, with the purpose of treating HCC.

Advantages

1. Novel therapeutic alternative for patients exhibiting resistance to current drugs.
2. Therapeutic improvement through more selective therapies, potentially reducing the need for concurrent treatments.
3. Greater control of tumor activity in patients who do not respond adequately to initial treatment.

Industrial/Intellectual Property Protection

This technology is protected by a patent currently in the national application phase.

Collaboration Objective

The objective is to seek a collaboration that leads to the commercial exploitation of the presented invention.

Classification

Activity/Type: Biotechnology and Molecular Diagnostics

Area: Oncology

Representative Institution and Inventor

The principal investigator behind the innovation is Manuel D. Gahete, head of the GC30 Molecular Hepatology group.

The project's development has been made possible thanks to the Andalusian Health Service and the University of Córdoba.

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MEDICAL DEVICES

FIBICO – Anti-decubitus system based on elastomer with a radial design

The Challenge

Pressure ulcers, also known as decubitus ulcers, pressure sores, or bedsores, are localized damage to the skin or underlying tissue that usually occur over a bony prominence as a result of long term pressure, or pressure in combination with shear or friction. Areas particularly prone to pressure sores are those that cover the bony areas such as the occiput, trochanters, sacrum, malleoli, and heel. Pressure ulcers are a major problem for national healthcare systems since they frequently occur in hospitalized patients, negatively affecting the patients' quality of life by extending the duration as well as increasing the costs of hospitalization. Protection is the best way to prevent ulcers. Any pressure causing damage to skin or tissue must be removed immediately. For this purpose, there are many special mattresses, cushions, and protective devices that can relieve the external pressure on vulnerable areas of body limbs. However, traditional anti-decubitus suspension systems have a series of closure elements (such as Velcro straps) and a fastener that partially holds part of a patient's body, making such systems poorly breathable. With this in mind, researchers from the Reina Sofía University Hospital of Cordoba and IMIBIC (the Maimonides Biomedical Research Institute of Cordoba, Spain) have developed an anti-decubitus system based on elastomers with a radial design, that can be adapted to any part of a patient's body without the use of Velcro straps or fasteners.

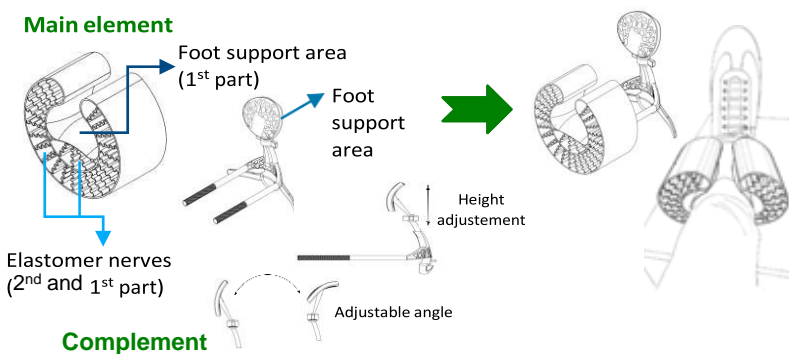
Technology description

The new anti-decubitus system is based on elastomer, a polymeric material that behaves elastically. The high flexibility of this material cushions the weight of the patient's body, reducing pressure and, consequently, reducing the patient's discomfort. This technology allows the design of anti-decubitus devices for different parts of the body, such as the back and sides of the head, scapulas, hips, heels, ankles, etc. This system consists of a two-level structure interconnected by elastomer nerves, which assume the patient's weight. The radial design with circumferential nerves distributes the pressures, passing part of the axial pressure to the radial plane. As mentioned above, this system allows the design of specific devices for different parts of the body that may be affected by bedsores.

Prototype designed for heels and ankles

The researchers have developed a prototype design for heels and ankles as an example, which consists of a main element and a complement. The main element has two parts. The first one supports the patient's foot and has greater flexibility. Its curvature is mainly intended to reduce the pressure applied to the foot. The second part is underneath, in contact with the bed, and distributes the pressure uniformly. This second area is more robust due to the higher density of the elastomer nerves, which provide rigidity and stability to the device. Additionally, the complement can be adjusted to the main element to prevent clubfoot, as it maintains a 90-degree angle between the patient's foot and leg.

Figure 1: Design of the anti-decubitus device for heels and ankles.



View of the main element and the complement separately and assembled.

Benefits of blood clotting monitoring

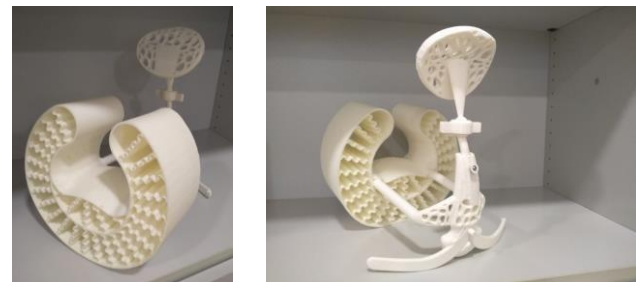
The new system presents multiple advantages over existing ones:

- **Reduction of the pressure exerted on the patient's body**, thanks to its design with radial nerves that distributes the pressures uniformly.
- **Increased patient comfort**, due to the high coefficient of flexibility of the elastomer material.
- **Reduction of the material required** for cushioning the patient's weight, which involves a **reduction in manufacturing costs** and **reduces the weight** of the device.
- Its perforated design **prevents sweating, odors, and slippage**, reducing the patient's discomfort.
- **Versatility**, the system can be used to design anti-decubitus devices for application on different parts of the patient's body.
- The prototype for heels and ankles allows the patient's mobilization without the need to remove the device, **facilitating healthcare professionals' work**.
- The proposed design does not require fasteners and the complement is adjustable, making it **comfortable** and **adaptable for each patient's needs**.

Stage of development

The device is currently in TRL 6. A prototype has been developed and labtested by clinical and technical staff. An injection mold (using silicone or rubber) can be developed to perform usability tests and the needed clinical trials with patients at the hospital. A utility model has been requested to the Spanish Patent and Trademark Office, with priority date in September 2021.

Figure 2: Prototype of the anti-decubitus device for heels and ankles



Represented Institution and Inventor:

The invention has been co-developed by researchers that belong to the Physical Medicine and Rehabilitation Unit from Reina Sofia University Hospital of Cordoba and engineers from the Maimonides Biomedical Research Institute of Cordoba (IMIBIC) and the Foundation for Biomedical Research of Córdoba (FIBICO). Together they constitute a group with extensive research experience in Physical Medicine.

Objective of the collaboration:

The represented institution is looking for a collaboration that leads to a commercial exploitation of the presented invention. The ideal scenario for the institution would be to reach an agreement in order to transfer the technology use by sale or a license (exclusive or non-exclusive). However, the form, terms, and conditions of the collaboration can be openly discussed if the presented technology is of interest.

FIBICO- ADJUSTABLE AREOLOTOME

Abstract

The present invention belongs to the technical field of medical devices, more specifically, the subject matter of the invention relates to a device for areola contour marking to be used within a mammoplasty procedure.

Description

Mammoplasty is one of the most frequent surgical procedures in plastic surgery. It is a procedure of remodelling or reconstruction of the breast, aiming at its restitution or morpho-volumetric improvement. In many of these breast surgeries, resizing of the nipple-areola complex is required, for which different fixed-size gauges and markers, known as areolotomes, are used.

The present invention solves the above limitations of the prior art by means of an adjustable areolotome comprising at least three marking parts, where each marking part has a marking surface and a first regulating element.

With the areolotome of the present invention, the marking pieces can be positioned at an adjustable distance from the central point, so that circumferences with different diameters can be marked, depending on the position of the marking pieces with respect to the central point.

The product allows the mass production of metal areolotomes, their sterilisation and reuse, without the need for other similar complementary instruments, a single device would allow all sizes to be available.

Advantages

1. It allows a single device to concentrate different sizes for the measurement and marking of the nipple-areola complex in a continuous range of values.
2. Therapeutic individualisation according to the morpho-volumetric characteristics of the patient, obtaining better results, shortening the learning curve and greater ease of use and intuitiveness.

Industrial/ Intellectual protection

This technology is protected by a utility model.

Objective of the Collaboration

Seek a collaboration that leads to the commercial exploitation of the invention presented.



Representative Institution and Inventor

The principal investigator behind the innovation is Juan Cámara Ruiz, clinical researcher belonging to the SAS.

The development of the project has been possible thanks to the Andalusian Health Service.

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SOFTWARE

FIBICO – IA2EPD Project (Artificial intelligence to empower the patient with diabetes)

Abstract

A research group from the Andalusian Public Health System (SSPA) has developed a dashboard that facilitates the management of the system for technical personnel and provides a tool for health personnel that enables customization of the system for each patient, based on their needs. At the same time, it provides reports on the degree of adherence to the behaviors previously agreed with the health personnel (therapeutic contract).

Description

The IA2EPD project search to provide health professionals with a tool that allows them to monitor the healthy behaviors that they prescribe to patients with diabetes through a protocol that involves a therapeutic contract with each patient to fulfill a series of activities. The protocol and design of the therapeutic contract where the activities that each patient must do, the time and frequency are defined, have been designed by the healthcare team.

This project consists of two well-differentiated blocks, the intelligent activity recognition core developed by the UJA and the display panel (dashboard).

The smart core is in charge of recognizing user activities through the use of sensors and smart devices. To do this, the core integrates a system based on artificial intelligence that, based on the data provided by the devices, determines, firstly, the locations of people with diabetes and, secondly, the type of activity they are doing

The main purpose of the IA2EPD Dashboard is to provide information to the patient and healthcare personnel to facilitate healthy behaviors. To do this, personalized reports are generated on the degree of adherence to the therapeutic contract, which make it possible to see the evolution of its compliance over time, highlighting the key indicators to improve. In addition, it facilitates system management for the technologist staff.

Advantages

Currently, no other application has been found that generates reports of this type on the degree of compliance with the activities agreed upon through therapeutic contracts between patients with diabetes and the health professionals who care for them

Industrial/Intellectual protection

This technology is protected by the Intellectual Property Registry

Objective of the Collaboration

Seek a collaboration that leads to the commercial exploitation of the invention presented. The terms and conditions of the license agreement can be openly discussed if the technology presented is of interest.

Clasification

Activity/Type: Software.
Pathology: Diabetes

Representative Institution and Inventor

The principal investigator behind the innovation is Jesús González Lama, a researcher in the GE10 Clinical-Epidemiological Research group in Primary Care.

The development of the project has been possible thanks to the Andalusian Health Service and the University of Jaén.

Contact

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FIBICO – GEMeR-Salud (Clinical Management, Drug Evaluation, and Health Outcomes)

Summary

GEMeR-Salud (Clinical Management, Drug Evaluation, and Health Outcomes) is an innovative digital ecosystem that integrates healthcare professionals and patients to optimize the selection, monitoring, and evaluation of high-impact medicines. The platform combines traceability, document management, and health outcomes analysis, including the patient's own perception.

Description

The GEMeR-Salud digital ecosystem addresses the challenge of the Spanish National Health System (SNS) to incorporate new medicines in an efficient and sustainable way.

It includes:

1. Request and evaluation of medicines (individualized and guideline inclusion).
2. Management of multidisciplinary committees.
3. Clinical and patient follow-up forms (PROMs/PREMs).
4. Outcomes module with real-time analysis and data export.
5. Dashboard and specific tools for professionals (physicians, pharmacists, heads of department, etc.).
6. Mobile app and web version for patients, with medication reminders, private messaging with the pharmacist, treatment information, and a suggestion box.

Industrial/Intellectual Property Protection

The GEMeR-Salud software is registered under Intellectual Property rights. It is protected for use within the Andalusian Public Health System, with potential for extension to the rest of the Spanish National Health System (SNS). There is expressed interest in exploitation licenses and in scaling it up at the national level.

Advantages

1. Improves the traceability of the care process and reduces management times.
2. Optimizes document management and decision-making by Pharmacy and Therapeutics Committees.
3. Engages patients as active participants through quality of life questionnaires (PROMs) and patient experience surveys (PREMs).
4. Multi-platform (web and mobile app), accessible and secure.
5. Enables real-time analysis and utilization of health outcomes data.
6. Promotes the sustainability and equity of the National Health System (SNS) by reducing clinical and economic uncertainties.

Collaboration Objective

The objective is to establish strategic partnerships for the commercial exploitation, implementation, and scaling of GEMeR-Salud within the Spanish National Health System (SNS) and other healthcare systems.

1. Technology companies for software maintenance and development.
2. Public and private entities interested in results transfer.
3. Hospitals seeking to integrate GEMeR-Salud into their clinical practice.

Classification

Activity/Type: Software

Area: Hospital Pharmacy, Clinical Management, and eHealth

Representative Institution and Inventor

The principal investigator behind the innovation is Beatriz Isla Tejera, a researcher affiliated with GC29 Immune-Mediated Inflammatory Skin Diseases (EICI).

The project's development has been made possible thanks to the Andalusian Health Service, Catalan Institute of Oncology Durán i Reynals, University of Navarra – Clínica Universidad de Navarra, Castilla-La Mancha Health Service, and University of Córdoba.

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FIBICO – Web and mobile application for rehabilitation monitoring

Summary

A group of researchers from the Andalusian Public Health System has developed software for monitoring post-operative rehabilitation. This type of software enables direct communication between specialist and patient, thus improving the recovery process remotely.

The app contains all the information needed to perform the different recovery exercises. The system can be used to provide personalized monitoring of any joint rehabilitation process based on exercises prescribed by the medical specialist.

Description

The software provides personalized and remote monitoring of the physical rehabilitation process for body joints and limbs as required by medical prescription.

It consists of a mobile app for the patient and a web server exclusively for the physician.

The system allows direct and asynchronous communication between patient and specialist, enabling the specialist to detect potential issues early during the rehabilitation process, before scheduled in-person consultations.

The human motion analysis module incorporated in the server is designed to support the specialist.



Mobile application functionalities:

1. List of personalized exercises prescribed by the specialist.
2. Recording and sending rehabilitation sessions.
3. History of completed exercises.
4. Messaging system for direct communication with the medical specialist.

Web system functionalities:

1. Registration, deletion, and modification of patients.
2. Viewing and annotating videos sent by their own patients (i.e., not all specialists have access to all patients).
3. Access to auto-generated reports and charts on patient video mobility.
4. Messaging system to communicate with the patient.

Advantages

1. It does not require specific image acquisition hardware or multi-camera setup.
2. It facilitates medical follow-up through a messaging system.
3. Automatic management of videos uploaded by the patient (enhanced data processing).

Industrial/ Intellectual Property Protection

This software is registered under Intellectual Property.

Collaboration Objective

The objective is to seek a collaboration that leads to the commercial exploitation of the presented invention.

Classification

Activity/Type: Health ICTs
Area: Rehabilitation

Representative Institution and Inventor

The principal investigator behind the innovation is Manuel Jesús Marín Jiménez, a researcher affiliated with GC19 Applications of Artificial Vision.

The project's development has been made possible thanks to the Andalusian Health Service and the University of Córdoba.

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FIBICO – Algorithm for calculating the risk of type 2 diabetes in cardiovascular patients based on gut microbiota profile, depending on the diet followed.

Summary

A research group from the Andalusian Public Health System (SSPA) has developed an algorithm that predicts the risk of developing type 2 diabetes (T2D) in patients with coronary disease. This is particularly important, as diabetes significantly increases the risk of experiencing new cardiovascular events in these patients. Based on data from the patient's gut microbiota profile obtained from biological samples, this algorithm can estimate an approximate value of the risk of developing T2D.

Description

Currently, clinical methods for the early detection of T2D are not effective, making it necessary to identify and develop new biomarkers to improve the accuracy and efficiency of predicting this disease.

Recent research has shown that the structure and composition of the gut microbiota may be closely related to the development of T2D. The development of this algorithm was carried out by analyzing patient samples before the onset and treatment of the disease, so that the associated microbiota profile is not biased by medications that could alter the structure and composition of the gut microbiota. This is particularly important for its applicability.

Using innovative computational tools, this algorithm has been developed to transform data derived from gut microbiota analysis into a risk value for developing T2D.

The algorithm is built using the coefficient values from COX regressions of the variables identified through Random Survival Forest, which best discriminate between coronary disease patients who develop T2D within the following five years and those who do not develop T2D during this period.

The numerical value obtained represents, after transformation, the percentage risk of developing T2D in the next five years, the percentage risk if a low-fat diet is followed, and the percentage risk if the Mediterranean diet is followed.

Advantages

1. It works in any computing environment and is adaptable to any programming language.
2. Better resolution than current predictive models based solely on clinical parameters.
3. Reduction in healthcare costs for patients affected by cardiovascular disease.

Industrial/Intellectual Property Protection

This software is registered under Intellectual Property.

Collaboration Objective

The objective is to seek a collaboration that leads to the commercial exploitation of the presented invention.

Classification

Activity/Type: Biotechnology and Molecular Diagnostics
Area: Cardiovascular

Representative Institution and Inventor

The principal investigator behind the innovation is Antonio Camargo Garcia, a researcher affiliated with GC09 Nutrigenomics. Metabolic Syndrome.

The project's development has been made possible thanks to the Andalusian Health Service, University of Córdoba, and the Networked Biomedical Research Center Consortium (CIBER).

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FIBICO – Algorithm for calculating the probability of type 2 diabetes remission in cardiovascular patients based on gut microbiota profile, through the consumption of healthy diets.

Summary

A research group from the Andalusian Public Health System (SSPA) has developed an algorithm that predicts the probability of type 2 diabetes remission in patients with coronary disease through the analysis of gut microbiota. This algorithm calculates the probability of type 2 diabetes (T2D) remission through the consumption of healthy diets. Based on data from the patient's gut microbiota profile obtained from biological samples, this algorithm can estimate an approximate probability value of T2D remission.

Description

Currently, clinical methods to predict T2D remission in patients with coronary disease are not sufficiently developed. This is particularly important, as diabetes significantly increases the risk of experiencing new cardiovascular events in these patients.

The composition and structure of the gut microbiota may be closely related to the progression of T2D. Using the microbiota as a biomarker is effective before the start of T2D treatment, as it should not be biased by medications such as metformin, which modify the gut microbiota. Therefore, it is applicable to patients with recently diagnosed T2D, prior to starting pharmacological treatments.

Together with current computational tools, an algorithm has been developed that, based on data obtained from gut microbiota analysis, allows estimating the probability of disease remission (type 2 diabetes) through the consumption of healthy diets.

The algorithm is built using the coefficient values from COX regressions of the variables identified through Random Survival Forest, which best discriminate between coronary disease patients with type 2 diabetes who achieve diabetes remission within the next five years and those who do not achieve remission during this period.

The numerical value obtained represents, after transformation, the probability of T2D remission in the next five years if a low-fat diet or the Mediterranean diet is followed.

Advantages

1. It works in any computing environment and is adaptable to any programming language.
2. Better resolution than current predictive models based solely on clinical parameters.
3. Reduction in healthcare costs for patients with cardiovascular disease.

Industrial/Intellectual Property Protection

This software is registered under Intellectual Property.

Collaboration Objective

The objective is to seek a collaboration that leads to the commercial exploitation of the presented invention.

Classification

Activity/Type: Biotechnology and Molecular Diagnostics

Area: Cardiovascular

Representative Institution and Inventor

The principal investigator behind the innovation is Antonio Camargo García, a researcher affiliated with GC09 Nutrigenomics. Metabolic Syndrome.

The project's development has been made possible thanks to the Andalusian Health Service, University of Córdoba, and the Networked Biomedical Research Center Consortium (CIBER).

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FIBICO – Algorithm for calculating the risk of major events in cardiovascular patients based on gut microbiota profile, depending on the diet followed.

Summary

A research group from the Andalusian Public Health System (SSPA) has developed an algorithm that predicts the probability of recurrence in patients with coronary disease. Based on patients' gut microbiota profiles, it is possible to assess the risk of major adverse cardiovascular events (MACE) and identify the diet that reduces the risk of experiencing new events.

Description

The prevention of new cardiovascular episodes in patients with established cardiovascular disease is a major challenge in clinical practice, as current predictive models have limited accuracy. One of the most important factors in reducing the recurrence of events is patients' lifestyle, particularly diet.

Specifically, the CORDIOPREV study compared two healthy diets to evaluate which one more effectively reduced the occurrence of MACE in patients with coronary disease. Since traditional predictive methods rely on patient-reported information, they lose precision compared to molecular markers when predicting future complications, making the use of this algorithm a more effective solution for this patient profile.

The algorithm is based on identifying baseline differences in the gut microbiota of coronary disease patients who experienced new MACE in the following seven years compared to those who did not.

The algorithm is built using the coefficient values from COX regressions of the variables identified through Random Survival Forest, which best discriminate between coronary disease patients who experienced new MACE in the following seven years and those who did not experience new major cardiovascular events during this period.

The numerical value obtained represents, after transformation, the percentage risk of experiencing a MACE in the next seven years, the risk percentage if a low-fat diet is followed, and the risk percentage if the Mediterranean diet is followed.

Advantages

1. It works in any computing environment and is adaptable to any programming language.
2. Better resolution than current predictive models based solely on clinical parameters.
3. Reduction in healthcare costs for patients with cardiovascular disease.

Industrial/Intellectual Property Protection

This software is registered under Intellectual Property.

Collaboration Objective

The objective is to seek a collaboration that leads to the commercial exploitation of the presented invention.

Classification

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