IN VITRO METHOD FOR THE DIAGNOSIS OR PROGNOSIS OF NEURODEGENERATIVE DISORDERS - BIODEP

PROTECTION

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Owners: Galician Public Foundation for Biomedical Research Galicia Sur (FPGIBGS); Servizo Galego de Saúde (SERGAS) and University of Vigo (UVigo)

Inventors: Carlos Spuch Calvar, Tania Rivera Baltanás, Jose Manuel Olivares Díaz, Miguel Ángel Correa Duarte, Moisés Pérez Lorenzo, Verónica Salgueiriño Maceira, Ana Sousa Castillo and María Blanco Formoso.

BACKGROUND

Major Depression is one of the most common mental disorder, affecting between 10% – 20% of the general population. Globally, it is estimated that more than 264 million people of all ages suffer from depression. Depression is a leading cause of disability worldwide and is a major contributor to the overall global burden of disease**.**

The diverse etiopathogenesis and the absence of biomarkers that can be used in the diagnosis of the disease and, above all, that can be used for early diagnosis (when the treatment may be more effective since it has not yet been produced an irreversible deterioration in the brain), make difficult a correct diagnosis and treatment, making this challenge one of the priority lines of research in current psychiatry.

Therefore, achieving a blood-based biomarker that helps to the psychiatry to make the correct diagnosis and select the appropriate treatment for each patient in the less possible time is crucial for the patient's complete recovery.

In order to achieve this, it is necessary the use of new technologies, for example, nanotechnology that allows the ultra-detection of biomarkers in complex biological fluids, such as the blood, for the diagnosis and prognosis of many diseases, including neurodegenerative diseases.

Surface-enhanced Raman Spectroscopy (SERS) is currently a powerful analytical technique for the development of rapid and easy-to-use diagnostic tests, applicable in biological fluids and with great potential for sample screening and use in biomarkers of therapeutic efficacy.

ACHIEVEMENT AND RESULTS

It is proposed an *in vitro* method for the diagnosis or prognosis of neurodegenerative disorders based on a new 48 KDa fragment of LRP1 (**48 KDa – LRP1**), wherein if the ratio of 48 KDa – LRP1 / proLRP1 level is significantly higher as compared with the level measured in healthy controls, this is indicative that the subject is suffering from major depression or has a bad prognosis.

The proposed biomarker and a new nanosensor for the detection of the fragment 48 KDa–LRP1 and proLRP1 in biological samples through Surface-enhanced Raman Spectroscopy (SERS) technology for the diagnosis of Major Depression in an early stage have been validated in a cohort of patients.

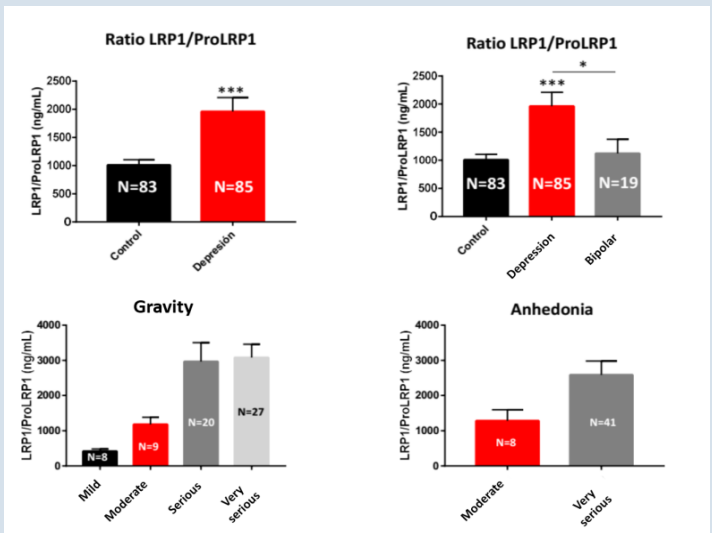
PURPOSES AND ADVANTAGES

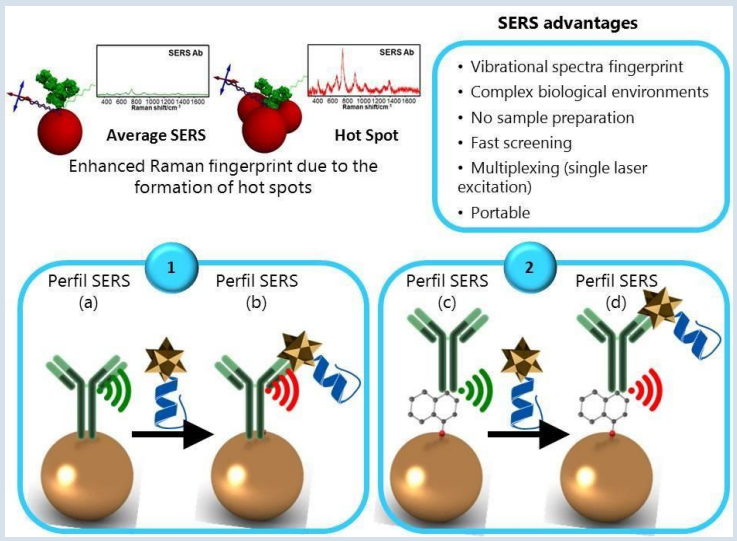
The **main advantages** of this propose are:

- A new biomarker has been identified and validated among LRP proteins or fragments thereof, aimed at diagnosing of neurodegenerative diseases, and more specifically of Major Depression.
- An accurate system that allows the detection of protein fragments at very low concentrations, avoiding the problem of the conventional methods, especially in the early stage of the disease has been validated.

COLLABORATION OFFER

This offer can be materialized in a "Partnership Agreement" in order to co-develop this technology or in a "License Agreement" for using use the proposed technology directly. If this offer is of your interest or you need more information about, please contact us.





CONTACT INFORMATION:

Nerea Alonso Sousa
Innovation and Technology Transfer Unit
Galician Public Foundation for Biomedical Research Galicia Sur –
IIS Galicia Sur

Tel: +34 986 217 454
Email: nerea.alonso@iisgaliciasur.es
Webs: www.fundacionbiomedica.org
www.iisgaliciasur.es

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INSTITUTO DE
INVESTIGACIÓN SANITARIA
Galicia Sur

Hospital Álvaro Cunqueiro
Estrada Clara Campoamor, 341
36312 Vigo, Pontevedra - SPAIN

www.fundacionbiomedica.org www.iisgaliciasur.es