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FISEVI Fundación Pública Andaluza para la Gestión de la Investigación en Salud de Sevilla

METHOD FOR THE DIAGNOSIS OF PARKINSON'S DISEASE SEVERITY

Summary

A research group of the Andalusian Public Health System and the University of Seville, has developed a method and a kit for the diagnosis of Parkinson's disease (PD) severity based on the quantification of a specific biomarker in insolated biologic samples. The research group has demonstrated that there is an altered Redox state in serum of patients with early PD, characterized by halogenative and nitrosative stress.

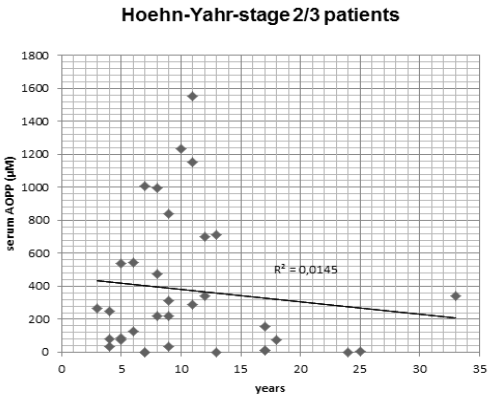
Background & Description of the offer

Oxidative stress has been postulated as one of the main physiopathological hallmarks of PD. Protein and amine halogenation is a type of oxidative stress induced by phagocytic over-stimulation, and its role in PD has not been discerned yet. Advanced oxidized protein products (AOPP) are markers of protein halogenation which are reliably enhanced in serum of patients with PD relative to control subjects ($p<0.012$), and to a lesser extent in cerebrospinal fluid.

Levels of AOPPs are progressively reduced over time, and duration of PD is larger in Hoehn-Yahr stage 2/3 patients (n=34) with low AOPP serum levels (R^2= 0.0145, $p<0.003$). Serum AOPP level higher than 350 µM is indicative of stronger severity of the disease. Thus, patients with low AOPP levels reach stage-4 or very advanced disease after more than 13 years of evolution, in contrast to patients with high AOPP levels which reach stage 4 sooner. These protein products are not cytotoxic, unlike 3-chlorotyrosine, but they are known to form inflammatory mediators after conjugation with serum albumin.

PD is the most common neurodegenerative disease after Alzheimer's disease and its diagnosis is mainly based on physical exams to determine the motor symptoms of the patients. Therefore, **there is an unmet medical need of developing an easy kit for rapid measuring of AOPP in serum of patients which would allow following-up of patients in order to evaluate the severity of the disease, help professionals to accurately select the best treatment for each patient as well as determine the efficacy of the selected treatment.**

The present technology is based on the hypothesis that serum level of AOPP is a prognostic marker of PD duration, and these oxidized proteins could participate in the development of Parkinsonian neuroinflammation. Additionally, the present method and kit enables the evaluation of new treatments aimed to reduce phagocytic activity and formation of halogenated proteins.



Linear regression between serum AOPP levels and corresponding duration of Parkinson's disease (years)

Key Innovative Features & Competitive Advantages:

- The present technology provides a new biomarker and method to evaluate the grade of severity of PD from a sample of blood, serum or plasma.
- This method is also useful to following-up if the therapy administered to a PD patient is effective.
- Moreover, the technology provides a kit comprising specific antibodies for the quantification of AOPP, which enables to determine the severity of the disease as well as a reliable prediction of the response to treatment of the patients.

Intellectual property protection

This technology is covered by a Spanish patent application with the possibility of international extension.

Category

Neurodegenerative diseases; Diagnostic/Prognosis methods/kits.

What we are looking for?

We are looking for a partner interested in a license and/ or a collaboration agreement to further develop and exploit this innovative technology.

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