METHOD FOR PREDICTING THE PROGNOSIS AND PROBABLE EVOLUTION OF PATIENTS WITH SEPSIS, SEVERE SEPSIS, AND SEPTIC SHOCK

DESCRIPTION OF THE TECHNOLOGY

Sepsis is a global healthcare problem, increasing 9% per year and remains the primary cause of death from infection despite advances in modern medicine. Sepsis can progress to a septic shock, with a mortality range of 40-70%.

In hospitals, sepsis is a serious problem in all intensive care units (ICUs), with a prevalence of 10-30% and representing 40%-60% of the total cost of an ICU.

Current diagnosis of sepsis and septic shock is slow and inaccurate. Since the risk of death from this condition increases with every hour it remains untreated, it's critical for clinicians to diagnose sepsis accurately and quickly as well as to predict its progression to septic shock.

The current approach for diagnosing sepsis is based on clinical signs such as fever, tachycardia, tachypnea and others given by general variables such as haemodynamic and tissue perfusion variables.

In recent years, considerable efforts have been made to find biomarkers able to diagnose and prognose sepsis based on C-reactive protein (PCR) and procalcitonin (PCT). However, all of them are based on immunological assays (IAs), with the disadvantages associated with this methodology. For instance, cross-reactivity, auto-antibodies generation, low specificity, elevated costs, among others. For that reason, it is required new sensitive, specific and affordable biomarkers able to predict the evolution of sepsis.

Our lab has developed a fast method to accurately diagnose and prognose severe sepsis and septic shock. This method is based on quantification of circulating histones in a plasma sample. The method developed consist on the quantitation of circulating histones by mass spectrometry, using as internal reference peptides with specific sequences and isotopically labelled.

MARKET APPLICATION SECTORS

The objective users of this technology are the intensivist physicians who treat patients in an ICU.

For this reason our target is the intensive care applications market and more specifically:

- Drug development for sepsis indication.
- *In vitro* diagnosis (IVD) kits.

In summary, the global market focused on sepsis will reach $35 billion in 2017

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

Our disruptive methodology:

- Provides a high sensibility and specificity for diagnosis (Sn 94.1%; Sp 90.0%) and prognosis (Sn 75.0%, Sp 88.9%) of sepsis.
- Allows the prognosis in just 3 hours.
- Allows multiple quantification of different proteins in just one experiment using a little volume of biological sample (blood, serum, plasma).
- Is low cost compared to current methodologies

CURRENT STATE OF DEVELOPMENT

This method has been optimized in a clinical series of patients with severe sepsis and septic shock

INTELLECTUAL PROPERTY RIGHTS

This technology is protected by the European patent application EP16382509.4.

COLABORATION SOUGHT

A potential partner for product development is sought. Such partner should be able to manufacture the commercial IVD kit in the frame of ISO standards and CE mark.

CONTACT

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