



PROBES, SYSTEMS AND METHODS FOR MEASURING AND / OR CHARACTERIZING UTERINE ACTIVITY IN A NON-GESTING UTERUS

DESCRIPTION OF THE TECHNOLOGY

The proposed innovation is a system that records electrophysiological activity in a non-pregnant uterus. This system comprises from the transmission, acquisition, recording and analysis of the electromyographic signal of a non-pregnant uterus, using a multipolar catheter (Figure 1) introduced into the uterine cavity and connected to a standard electromyographic bioenhancement system.

Currently there is no system in the market capable of detecting uterine peristalsis objectively, accurately and non-invasively.

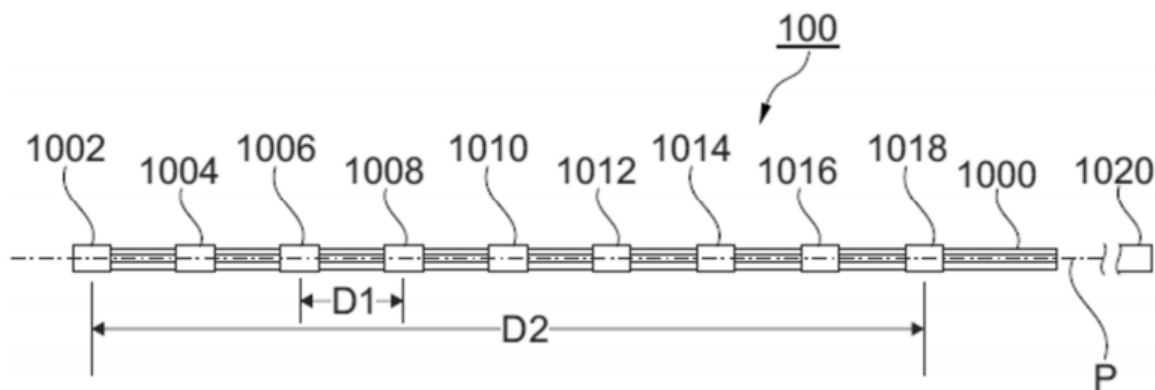


Image 1: Patented multipolar catheter

Uterine electromyography, electrohysterogram (EHG) or uterogram, is defined as the recording of changes in the electrical potential of myometrial muscle cells associated with uterine contractions during the menstrual cycle or during pregnancy. Its interest is based on the fact that the contractile capacity of the uterus is a direct consequence of this electrical activity. Thus, the appearance of bursts of action potentials in these muscle cells is directly related to the presence of mechanical muscle contractions.

The main objectives of the use and study of EHG can be divided into two large groups: - on the one hand, to be an alternative technique for monitoring uterine dynamics and electrophysiological characteristics during pregnancy that overcomes the main limitations of traditional tocography – on the other hand, to study the uterine electrophysiology during the menstrual cycle of the patient in a non-pregnant uterus to identify healthy and pathological patterns that may be related to different uterine pathologies such as infertility, endometriosis, adenomyosis and fibroids.

MARKET APPLICATION SECTORS

- Public and private gynecology and assisted reproduction clinics
- Pharmaceuticals in the study of uterus-modulators

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- It provides information on the electrophysiological characteristics of peristaltic waves, which helps in decision-making when selecting the optimal moment for embryo transfer, in IVF techniques to improve the cost-effectiveness of ART treatments.
- It allows the study of uterus-modulators
- It allows the study of uterine pathologies related to myometrial activity



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CURRENT STATE OF DEVELOPMENT

There is currently a prototype and associated software available for demonstration. The device is undergoing a clinical study design phase to compose the dossier for the CE marking application

INTELLECTUAL PROPERTY RIGHTS

European Patent: EP20382211, dated April 20, 2020, with a positive European Search Report.
Title: Probes, systems and methods for measuring and / or characterizing uterine activity in a nonpregnant uterus.

COLLABORATION SOUGHT

Companies interested in licensing the technology

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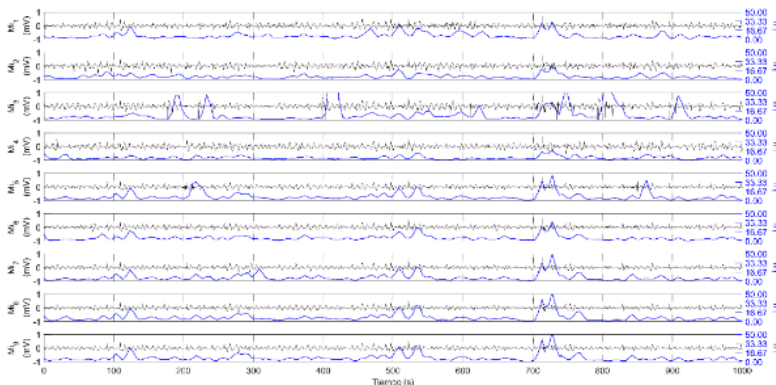


Image 2: Peristaltic activity signals. In black EHG signal detected with internal catheter. In blue, calculated signal for the detection of peristaltic contractions.

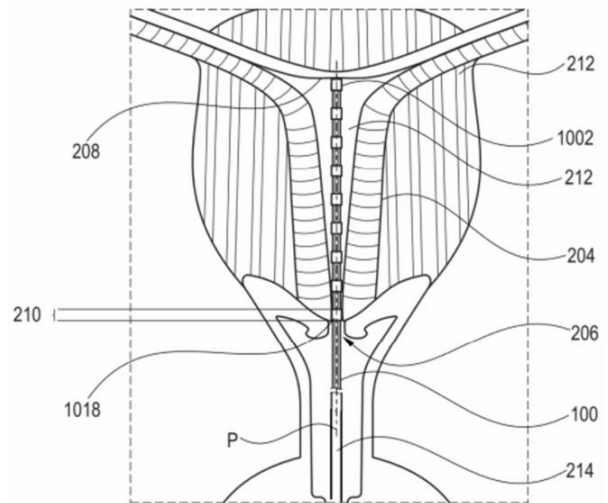


Image 3: Positioning of the catheter in the non-pregnant uterus

CONTACT

Responsible scientist: MSc, PhD. José Alberola Rubio

Contact: Teléfono +34 667569020; E-mail: pepe_alberola@iislafe.es

OTRI IIS La Fe

Instituto de Investigación Sanitaria La Fe

Av. Fernando Abril Martorell, nº 106 46026 Valencia (España)

Contacto: otri@iislafe.es; +34 961 246 609 / +34 618 73 00 95