Device for monitoring of fetal physical activity during the second half of pregnancy

Development status

Phase 2

Feasibility study. There is a realistic design of the technology and the initial tests in the laboratory are leading to the specification of the technology requirements and its capabilities.

IP protection status

Patent application in preparation.

Partnering strategy

Co-development, Collaboration, investment, licensing

Institution

UHK

Univerzita Hradec Králové

Challenge

Subjective monitoring of fetal physical activity by a pregnant woman is a simple but effective method to verify the physiological condition of the fetus (perception of a certain frequency / intensity of fetal movements during the day throughout pregnancy). However, the use of the method is limited, as the pregnant woman is actively involved in the process of monitoring. The standard objective method widely used in practice is simultaneous recording of fetal heart rate and uterine contractions (cardiotocography, CTG). However, this method is not fully comfortable for a pregnant woman (supine position is needed), it cannot be performed continuously and is available in medical facilities only. The proposed device can be used to improve the self-monitoring, as the device allows continuous monitoring without the need for active involvement of the pregnant woman (e.g. during her sleep).

Description

The technology is represented by a measuring device equipped with a system of sensors, a cloud system for data collection and a program for data analysis. The principle of the device is to determine changes in hemodynamics, that can indicate fetal movements in the uterus. The device was verified against CTG. The placement of at least two sensors is possible both under the body of the monitored pregnant woman (or under the mattress of the bed) and directly on the surface of the pregnant woman's body, in both cases in areas above or below the position of the uterus. The target group will be: i) women with a physiological course of pregnancy at the time of delivery, ii) pregnant women with a serious obstetric history (intrauterine fetal death during previous pregnancies), iii) pregnant women with a defined specific risk associated with an increased risk of intrauterine fetal death (fetal growth restriction), iv) pregnant women with impaired perception of fetal movements due to decreased / increased amniotic fluid volume or high BMI.

Commercial opportunity

The technology is intended for use as self-monitoring in the home environment for pregnant women with physiological and high-risk pregnancies in order to detect fetal physical activity more accurately (even during mother´s sleep). For healthcare area certification for medical devices in accordance with the EU Medical Device Regulation 2017/745 will be required. Currently we look for a business partner, who might be ineterested for commercial exploitation.