

Tiny medical implant developed in Tuebingen – microtechnologies from the European Union project VECTOR facilitate early detection of acute bleeding in the GI tract

Within the European Union project VECTOR, novineon Healthcare Technology Partners GmbH from Tuebingen, Germany, has developed a tiny implant for early detection of acute gastrointestinal bleeding. The researchers realized a prototype of the implant that could reliably detect haemorrhage inside the digestive tract and immediately produce an external alarm signal. Acute bleeding in the GI tract is a medical emergency that affects about 50 to 150 per 100,000 persons every year and up to 10 to 30% of them die, depending on the underlying disease. Decisive for a successful treatment is a timely diagnosis, but nowadays, acute GI bleeding can only be detected by delayed clinical symptoms. “By signalling a bleeding as it occurs, this implant can save precious time in a life-threatening situation” says Professor Marc O. Schurr, MD, novineon’s managing director and coordinator of the VECTOR project.

When an acute bleeding occurs, for instance caused by peptic ulcers or upper GI varices, it can lead to loss of a high amount of blood without causing direct symptoms. The person concerned will recognize the bleeding with a certain time delay, e.g. by dizziness due to the blood loss, when precious time for successful treatment is already lost. Acute upper GI haemorrhage is considered the most frequent emergency in gastroenterological units worldwide, and is treated endoscopically or by open surgery. Endoscopic treatment is preferable due to its lower invasiveness, but the recurrence rate is rather high with up to 35% for peptic ulcers and up to 70% for upper GI varices. Recurrent bleeding mostly occurs within 72 hours after the treatment and comes with a comparatively high lethality.

Researchers of novineon Healthcare Technology Partners GmbH in Tuebingen, Germany, have invented a novel optical micro-sensor that can detect the presence of blood inside the digestive tract. This sensor technology, originally developed for endoscopic capsules for recognition and treatment of gastrointestinal cancer within the scope of the VECTOR project, has been integrated into a tiny battery-powered telemetric implant which has the size of a common pharmaceutical pill and can thus be introduced into the digestive tract during an endoscopic bleeding treatment. The implant can be fixed to the organ wall by means of a clip that is provided by Ovesco Endoscopy AG in Tuebingen, also partner in the VECTOR project. If a recurrent bleeding occurs while the implant is in place, it will immediately send an alarm signal to an extra-corporeal receiver that can directly alert the patient and the hospital staff. An immediate endoscopic screening can then ensure fast and effective bleeding control.

novineon pursues the goal of making this novel implant available for regular clinical use, expecting that this will positively influence the treatment pathway of patients with acute gastrointestinal bleeding. “Prototypes of the implant are currently going through systematic pre-clinical evaluation” says Sebastian Schostek, director of novineon Technologies, novineon’s research and development branch.

About the VECTOR project

The objective of the VECTOR project is to develop intelligent endoscopic capsules using innovations in micro- and nanotechnology. The VECTOR project aims at investigating and developing a miniaturised robotic pill for advanced diagnostics and therapy in the human digestive tract. The project mission is to make a significant contribution to the diagnosis and treatment of digestive cancers and their precursors and to strengthen the competitiveness of the European biomedical industry through innovative technologies. The VECTOR project is supported by the European Union within the 6th Framework Programme for a duration of four years. The consortium includes 18 partners from industry and research organisations. More information is available at www.vector-project.com.

About novineon

novineon Healthcare Technology Partners is a private consulting and research company for the healthcare industry. As professionals at the interface between the scientific and the business sector we are acting internationally. We support manufacturers and users of medical products and services in all aspects of R&D, product assessment and marketing. In addition to our services in strategy consulting and contract research for industry, we invest in start-up companies and help them convert their technological competence into business success.

Further Information

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