JOANNEUM RESEARCH HEALTH

Institut für
Biomedizin und Gesundheitswissenschaften

TECHNOLOGY OFFER

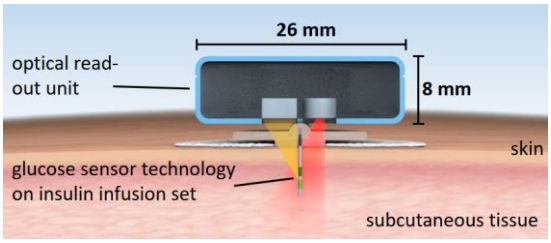
SPIDIMAN single-port diabetes management:
Continuous glucose monitoring with simultaneous insulin infusion

The single-port technology represents an innovative approach to reduce the burden for patients with type 1 diabetes. It reduces the number of devices to be worn by the patients and also the number of access sites to the subcutaneous tissue necessary for diabetes management to only one.

BACKGROUND

Diabetes is one of the largest global health emergencies with an estimated 425 million adult patients in 2017, whereby approx. 10% of the patients suffer from type 1 diabetes. Patients with type 1 diabetes have to maintain their blood glucose levels in a certain range to avoid life-changing late-term complications. Besides conventional finger pricking, continuous glucose monitors (CGM) and insulin pumps are available and proved to be beneficial for diabetes management but requires two separate access sites to the subcutaneous tissue. Additionally, the patient has to wear two separate devices.

CONCEPT



The SPIDIMAN (Single-Port Insulin Infusion for Improved Diabetes Management) system is an innovative glucose sensor technology that aims to improve glycemic management of type 1 diabetic patients by combining CGM and continuous subcutaneous insulin infusion (CSII). The novel single-port approach allows the measurement of blood glucose concentrations directly at the site of insulin infusion. The glucose sensor technology is applied as a thin coating on the needle of the insulin infusion set and thus combines CGM and CSII. The novel glucose sensor technology is a phosphorescence-based glucose sensor that is read out transcutaneously by an optical readout unit that is placed on the skin surface above the sensor.

ADVANTAGES

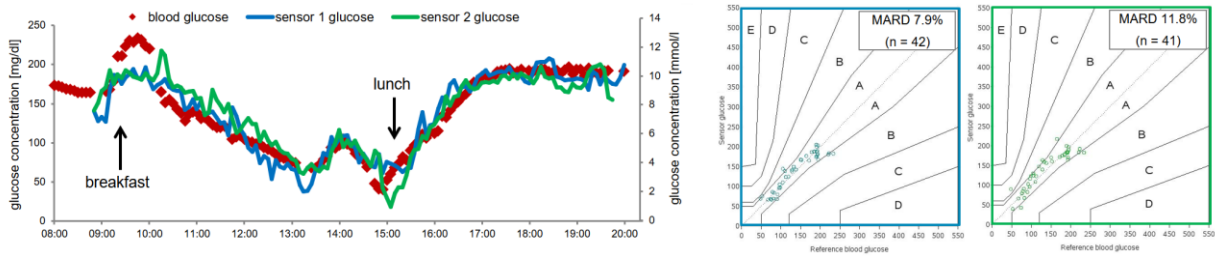
- Single-Port technology uses only one access site
- CGM and CSII are integrated into one single device
- Increased comfort of wear as well as increased acceptance by patients
- Small dimensions especially suitable for children and adolescents
- The single-port technology promises improved acceptance by patients with type 1 Diabetes

PUBLICATIONS

Rumpler M. et al., Biosensors and Bioelectronics. (2017); https://doi.org/10.1016/j.bios.2016.08.039
Nacht B. et al., Biosensors and Bioelectronics. (2015); https://doi.org/10.1016/j.bios.2014.08.012
Hajnsek M. et al., Acta Diabetologica, (2014); https://doi.org/10.1007/s00592-014-0578-y

STAGE OF DEVELOPMENT

In a clinical evaluation prototypes of the single-port system achieved an overall MARD of 22.5% in 23 sensors, while individual sensors reached MARD values of about 10% (glucose profiles and error grid analysis is shown in the following figure). Technology Readiness Level is 5-6.



MARKET POTENTIAL

Patients who are already using an insulin pump will be able to easily adopt the new single-port device. There are 0.5 million pump users in the USA and another 0.5 million in Europe. The market potential for these two key markets sums up to 120 million sensors per year, as the site of the infusion set has to be changed every 3 days following the recommendation of the Centers for Disease Control and Prevention (CDC).

The estimated market growth is +7.5% per year and is driven by the rising number type 1 diabetes patients itself, the rising number of patients using an insulin pump instead of daily injections and the increasing usage of insulin pumps by type 2 diabetes patients. In 2017, the total costs of diabetes-related healthcare expenditures of adults were 377 billion USD and 166 billion USD in the Northern American countries and Europe, respectively.

IP SITUATION

Patents are granted in Europe: AT 507659 (B1), EP2440114 (B1)
Patent in USA is pending: US2012165625 (A1)
Patents are joint hold by Joanneum Research and Graz University of Technology.
Joanneum Research has the contractual agreed right to exploit the patents.

BUSINESS PROPOSAL

We are looking for a licensing partner for the SPIDIMAN Single-port technology
We will support technology transfer and further development in service for fee projects and/or joint product development in funded projects.

CONTACT

JOANNEUM RESEARCH Forschungsgesellschaft mbH
HEALTH Institute for Biomedicine and Health Sciences

Dr. Martin Hajnsek
Neue Stiftingtalstrasse 2
8010 Graz, Austria

Phone: +43 316 876-4123
Email: martin.hajnsek@joanneum.at
Web: www.joanneum.at/health

for more info see: www.spidiman.eu