New bite splint Diabrux wins Wrigley Prophylaxis Award

11/22/2021 – Researchers at the University Hospital of Düsseldorf have been awarded for their development of the first clinically validated bite splint to help diagnose sleep bruxism.

Prof. Dr. Michelle Ommerborn has won the Wrigley Prophylaxis Price 2021.

For her research, Dr. Michelle Ommerborn and her Team from the Outpatient Clinic for Restorative Dentistry, Periodontics and Endodontics at the University Hospital of Heinrich Heine University Düsseldorf in cooperation with Dr. Ralf Schäfer from the Clinical Institute for Psychosomatic Medicine and Psychotherapy at the University Hospital of Heinrich Heine University Düsseldorf has won the 2021 Wrigley Prophylaxis Award. Under the patronage of the German Association for Conservative Dentistry the Wrigley Oral Healthcare Program honors researchers and practitioners in the field of dentistry for outstanding achievements. Dr. Ommerborn has spent years researching bruxism and helped develop the special film “Diabrux”, which makes it possible to diagnose sleep bruxism consistently and reproducibly while also gauging the severity of the grinding.

Crucial Advancement: Diabrux enables early diagnosis

Patients with bruxism involuntarily clench, gnash or grind their teeth, which can result in headaches, tension and jaw pain as well as permanent damage to the enamel. The problem is that those with bruxism often are only diagnosed after the teeth have already been damaged. The team of dentists, psychologists and engineers led by Dr. Michelle Ommerborn and Dr. Ralf Schäfer from the Clinical Institute for Psychosomatic Medicine and Psychotherapy at the University Hospital of Heinrich Heine University Düsseldorf developed Diabrux, a device that makes it possible to gauge the severity of the grinding in the early stages. The film, less than a millimeter thick, can be comfortably worn at night as a bite splint, making observation at a sleep lab no longer necessary.

Bruxism causes permanent damage to the enamel.

Traces from grindig: Software analysis

Diabrux consists of multiple layers, each a different color. With every grinding motion, the teeth remove some of this material. “Depending on how much activity there is, a multicolor pattern appears. The color picture tells us where the motion is occurring and where enamel is being worn away,” explained Dr. Ommerborn of the novel approach. This nighttime teeth grinding leaves traces on the film that can be individually analyzed: “We have developed software with an image-processing algorithm specifically for Diabrux. The analysis is fully automated,” said Dr. Ommerborn, who stated that this makes the analysis objective and permits a quantitative evaluation. Furthermore, the device indicates even the slightest grinding motion, making early treatment possible for those affected. Dentists could use Diabrux to treat patients who grind their teeth, thereby avoiding costly subsequent damage when planning a dental prosthesis.

Diabrux validated in clinical trial – market potential verified

The enormous market potential of the Diabrux device was also verified as part of the "NRW Patent Validation" program, an initiative of the Ministry of Economic Affairs, Innovation, Digitalization and Energy of the German state of North-Rhine Westphalia (NRW) that actively promotes and develops select projects with relevant market potential. PROvendis assisted the researchers in applying for funding, which brought the project one step closer to marketability. The double-blind trial made possible by the funding has also been completed: Diabrux unequivocally distinguishes between those who grind their teeth and those who do not. The subjects also underwent a polysomnogram in a sleep lab, the scientific and internationally recognized gold standard. In terms of both sensitivity and specificity, Diabrux showed good results. With the trial's success, Diabrux is the first splint for those with bruxism that has been validated in a clinical trial.

The task now is to launch the Diabrux film on the market, and there is already demand from dentists. As part of NRW Hochschul-IP, an IP association of 28 universities in North-Rhine Westphalia, PROvendis is searching on behalf of Heinrich Heine University Düsseldorf for a company to license this patented invention so that Diabrux can soon be used in dental practice.

See the technology offer here.

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About PROvendis GmbH

PROvendis acts as a professional service provider in the entire field of IP management for more than 30 universities and extra-university research institutions as well as for companies and start-ups.

NRW Hochschul-IP – Network for Intellectual Property (IP) of NRW Universities

28 universities of North Rhine-Westfalia and PROvendis GmbH form the network NRW Hochschul-IP. The network for Intellectual Property (IP) encourages professional knowledge and technology transfer. Together with the University of Münster (WWU) PROvendis acts as the central service provider for NRW Hochschul-IP. The network NRW Hochschul-IP is funded by the federal state of North Rhine-Westfalia. Grant authority is the Ministry of Economic Affairs, Innovation, Digitalization and Energy of the State of North Rhine-Westphalia.