

Using saliva to study hormones

Hormones are specialist chemical messengers that provide a communication system between different parts of the body. They affect everything from growth and metabolism to appetite and mood, while also playing a vital role in puberty and fertility. When hormone imbalances occur, they can lead to a number of health issues, including infertility and menopausal problems in women. Medicare PLUS is using saliva testing to identify these hormone level imbalances for individuals across Slovenia and further afield.



Hormones play a vital role in regulating the function of many organs – including the reproductive tract, bones, kidneys, liver and muscles – and only need to be present in the body in tiny amounts to have dramatic effects. As a result, even a slight imbalance in the complex cascade of reactions that occur between glands that secrete these hormones and the delivery of a chemical message to a target tissue or organ can lead to health issues. For example, the levels of various reproductive hormones in women need to modulate precisely and frequently to control the menstrual cycle, the ability to become pregnant, and the menopause. Medicare PLUS – based in Ljubljana,

Slovenia – specializes in hormone testing to diagnose and monitor a range of conditions. Aleš Koščak, CEO of Medicare PLUS, explained: “We test for two main groups of hormones. The first is the hormones that affect our daily well-being and can lead to stress, burnout and depression, including cortisol, dehydroepiandrosterone (DHEA) and melatonin. These can be used to assess the health of the adrenal gland and its impact on the thyroid. The other group – which makes up the majority of our work – is the sex hormones and, for women, our studies mainly focus around progesterone, estradiol and testosterone.”

“Much of our work is helping middle-aged women who are suffering from a sudden change in health or mood, but we also help younger patients who are having problems with irregular – or a lack of – periods due to hormonal imbalance. For instance, about 10 percent of women with high levels of testosterone have polycystic ovary syndrome, with symptoms including irregular or absent menstruation and infertility. In contrast, low levels of sex hormones can lead to fatigue, malaise and osteoporosis. To help an individual understand and manage their health problems, it’s often best to examine the hormone balance as a whole, including the daily cortisol profile and levels of all the sex hormones in combination with blood test results, such as cholesterol and hemoglobin levels.”

The company uses saliva testing to analyze the free levels of hormones in a patient. Aleš continued: “We use saliva samples as we are able to measure free levels of hormones, which are biologically available and unbound. You can’t get these sorts of results from blood tests because around 95 to 99 percent of steroid hormones circulating in the blood are bound to carrier proteins and inactive. Results from saliva diagnostics therefore provide a more accurate representation of the true concentrations of these hormones in the body, offering a better indication of how they may be responsible for any patient symptoms.”



Some of the Medicare PLUS team: Petra Okoren, lab engineer (left), Bianca Bevc, head nurse (middle) and Aleš Koščak, CEO (right)

“All of the kits have been developed to work on the same assay principles, which makes [them] very simple and intuitive for us to use.”

“The benefits of saliva testing extend to the patient too. For some people, having blood taken is a painful and stressful process – and this stress can even affect results when looking at cortisol levels – whereas the non-invasive nature of saliva testing is stress free, eliminating the problem entirely. It’s also much easier to study the fluctuations in hormones over time, which is especially useful when looking at the menstrual cycle of women suffering from fertility problems, or to look at ‘before and after’ effects of treatments, such as hormone replacement therapy for post-menopausal women. Patients can take samples in the comfort of their own home, and take them multiple times per day, because samples don’t need further processing or special storage conditions. This sort of frequent sampling outside of a lab/clinic would be nearly impossible using blood collection.”

“I had used Tecan’s saliva immunoassay kits in a previous role, and knew I wanted to continue to use them when we established saliva testing here at Medicare PLUS. All of the Tecan ELISA kits we use – estradiol, progesterone, cortisol, testosterone, DHEA and melatonin – have been developed to work on the same assay principles, which makes it very simple and intuitive for us to use the different kits for all of our testing workflows. The kits are very reliable too, consistently performing to the high standards we require and generating very low CVs of under eight

percent. Tecan also runs an independent quality control scheme as an additional service that allows us to compare the performance of our testing results against other labs, which is vital to meet our external quality control regulations set by the Ministry of Health.”

“The Tecan team has been very supportive to our team over the years – they have a lot of knowledge and expertise in the area, and always have answers to our technical questions. When Medicare PLUS was founded, saliva testing was a relatively new concept in Slovenia. It’s since grown in popularity, and now we test samples from all over Slovenia, and also from neighboring countries, such as Croatia, Italy, Serbia and Bosnia. Patients are able to come to us directly for a sample collection kit, or via a referral from their doctor. On top of this, we have also partnered with several affiliated clinics to help meet the demand for this service, and we believe that the need for this service will continue to grow,” concluded Aleš.

SPOTLIGHT
ON **WOMEN**

To find out more about Tecan’s range of saliva diagnostics kits, visit www.tecan.com/ibl

To learn more about Medicare PLUS, go to www.medicareplus.si/en/