Research helping combat drug addiction

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(Medical Xpress) -- Better help with battling drug addiction could be at hand as a result of research underway at Victoria University of Wellington.

Dr Bronwyn Kivell, a Senior Lecturer in the School of Biological Sciences, is screening a number of anti-addiction compounds that may ultimately form the basis of medications that help reduce cravings and prevent relapses for people addicted to psychostimulants such as cocaine or methamphetamine.

Collaborating with a medicinal chemist at the University of Kansas in the United States along with her Victoria University colleague Professor Susan Schenk, Dr Kivell is investigating ways of targeting a protein in the brain, called the kappa opioid receptor, which can alter a person's perception of mood, reward and pain.

The researchers are focused on a Mexican herb called salvia divinorum, also known as Mexican or Tijuana tripping weed, a powerful hallucinogen that has been chewed by Mexican Indians for centuries.

Most hallucinogenic substances affect serotonin, a neurotransmitter in the body that influences people's sense of well-being, but Dr Kivell says salvia is different.

"It has a unique structure and contains compounds that we think could have anti-addictive properties."

The compounds are being developed at the University of Kansas and tested at Victoria University.

A usual problem with compounds that target kappa opioid receptors, says Dr Kivell, is their tendency to have extreme side effects such as nausea and depression.

"However, some of those we are testing have much milder side effects."

Another strand of Dr Kivell's research targets more effective therapies to help people stop smoking. She says while nicotine is the major addictive component in cigarettes, there are many other things in cigarette smoke that contribute to addiction.

Her research, being carried out with Crown Research Institute ESR (Institute of Environmental Science and Research), is studying the role of a number of minor tobacco alkaloids.

"Most tools to help people quit smoking are based on nicotine replacement and have relatively low success rates. Our goal is to work out if it is feasible to develop other anti-smoking aids that target proteins in the brain that are involved in addiction."

Dr Kivell, who completed her PhD at Victoria, has also carried out drug addiction research at the National Institute on Drug Abuse in Baltimore in the United States.

She returned to Victoria to work on a ground-breaking project that is looking at both the cell biology and the behavioural patterns resulting from long-term use of MDMA or ecstasy.

The work is a collaboration between Victoria's School of Biological Sciences and School of Psychology and aims to better understand the

changes ecstasy causes in the brain's neurochemistry and its impact on behaviour.

"Drug addiction research is exciting science and it's also very relevant. Banning every mind-altering drug is not going to work so we need to find therapies to help people with their addiction.

"It's a very complex field and there is a lot yet to understand about why some people who take drugs get addicted and others don't."

Dr Kivell has had funding from the Neurological Foundation, the Wellington Medical Research Foundation and the Health Research Council (HRC).

Provided by Victoria University