Addiction and the Body

by JESSICA

The Discovery of the Opiate Switch Responsible For Addiction

Drug addicts may be able to benefit directly from the results of new research by neuroscientists. This research focused primarily on the link in the brain that makes the connection with the further cravings for a drug among addicts. The drug produces a certain effect that can be described as “highly pleasurable” to the addict. This is all controlled by a powerful system that exists at a molecular level. It is these so-called “reward memories” that trigger an addict's need to use the drug over and over. Let's take a look at addiction and the body.

This remarkable discovery was made at Western University, which has branches both in London, England and in Canada. The addiction to this drug is generally referred to as an opiate addiction. These pleasurable memories, induced by the drug, create the addiction in many of these addicts by causing a very powerful craving for the drug. These cravings cause the addict to develop a hard-to-break habit. The discovery of this pathway could greatly help control and reduce drug cravings, thus helping the addict to break away from the substance.

The Brain’s Reaction to Illicit Substances

The Journal of Neuroscience published this research. Steven Laviolette leads the Addiction Research Group at Western University's Schulich School of Medicine and Dentistry. This group has studied how the brain reacts when exposed to a drug such as heroin. The main part of the brain, the basolateral amygdala, reacts in this case. A specific switch in this area of the brain contains a molecule that can be described as a memory molecule. All the memories that are connected with the feelings of the drug are stored here. This switch stores all the specific pleasures felt even when the body is withdrawing and relapsing from the effects of exposure to these drugs.

There are two molecular pathways involved in this phase of addiction. A switch controls the way these memories are made, both during the process of addiction to the drug and during its withdrawal. The name of this molecule is extracellular signal-related kinase (ERK). It is responsible for the first stage, early addiction. After this initial stage comes a second one. Calmodulin-dependent kinase II (CaMKII) is responsible for this pathway. The combination of the two pathways will serve to induce compulsive, intense cravings for drugs that belong to the opiate class.

This new research can bring great benefits to the pharmaceutical and therapeutic industries, which may be able to develop a drug that can control the connection between these pathways or stop the memory from developing at all. Thus, this powerful addiction could be brought under control, which offers some hope for those already addicted and wanting to quit. The goal of this research, according to Laviolette, has been to eventually offer help to the addicts, especially those hooked on heroin. Also, the researchers aim to help these addicts recover from the relapse that follows when there is no more of the drug being supplied to the body.