Abstract

Immunotherapies in the form of vaccines (active immunization) or monoclonal antibodies (passive immunization) appear safe and a promising treatment approaches for some substance-related disorders. The mechanism of action of the antibody therapy is by preventing the rapid entry of drugs of abuse into the central nervous system. In theory, immunotherapies could have several clinical applications. Monoclonal antibodies may be useful to treat drug overdoses and prevent the neurotoxic effects of drugs by blocking the access of drugs to the brain. Vaccines may help to prevent the development of addiction, initiate drug abstinence in those already addicted to drugs, or prevent drug use relapse by reducing the pharmacological effects and rewarding properties of the drugs of abuse on the brain. Passive immunization with monoclonal antibodies has been investigated for cocaine, methamphetamine, nicotine, and phencyclidine (PCP). Active immunization with vaccines has been studied for cocaine, heroin, methamphetamine, and nicotine. These immunotherapies seem promising therapeutic tools and are at different stages in their development before they can be approved by regulatory agencies for the treatment of substance-related disorders. The purpose of this article is to review the current immunotherapy approaches with emphasis on the risks and benefits for the treatment of these disorders.

Keywords

Immunotherapy, vaccine, drug abuse, treatment, cocaine, nicotine.