

Thought Lab 11.1: The Effects of Drugs on Neurons and Synapses

Purpose: Analyzing and explaining how different drugs affect neural impulses.

Procedure

- Working with a partner, use the information in the table to create a drug information pamphlet about one of the drugs presented. If possible, research the drug further using Internet or library resources. Your information pamphlet should include
 - a detailed explanation of how the drug affects the nervous system and other body functions
 - hazards to the nervous system and the entire body from short-term and long-term use of the drug
- Present your pamphlet to another group or to the rest of the class.

Effects of Selected Drugs on Human Systems

Drug	Effects on nervous system and body
nicotine	<ul style="list-style-type: none"> is derived from the tobacco plant is one of the main addictive ingredients in cigarettes and chewing tobacco, which cause cancer, respiratory problems, and other problems after long-term use rapidly stimulates the reward centre of the brain to release dopamine, which promotes feelings of euphoria stimulates certain areas of the body by mimicking the actions of acetylcholine, causing increased heart rate and blood pressure
marijuana	<ul style="list-style-type: none"> is harvested from the flowers and leaves of certain types of <i>Cannabis</i> plant when smoked, active ingredient (THC) interferes with synapses in the brain, including the reward centres produces feelings of euphoria, and reduces concentration and muscle coordination
ecstasy (MDMA)	<ul style="list-style-type: none"> affects neurons in the brain, causing overproduction of serotonin in the short term, produces feelings of pleasure can cause cardiac arrest, dangerously elevated body temperature, and rapid and permanent brain damage
cocaine	<ul style="list-style-type: none"> is naturally found in leaves of <i>Erythroxylon coca</i>, a species of coca plant targets neurons in the reward centre of the brain and prevents the re-uptake of dopamine increases energy levels and produces feelings of euphoria is highly addictive and can cause strokes and heart attacks
methamphetamine (meth, crystal meth)	<ul style="list-style-type: none"> enters the neuron by passing directly through neuron membranes causes excessive release of dopamine and blocks the dopamine transporter from pumping dopamine back into the transmitting neuron increases energy levels and produces feelings of euphoria often leads to extreme aggressiveness, delusions, and psychosis (greatly distorted perception of reality)

CHAPTER 11	Thought Lab 11.1: The Effects of Drugs on Neurons and Synapses (cont'd)	BLM 11.1.16
HANDOUT		

Analysis

1. Hypothesize what might make the drug you investigated addictive. Suggest a possible mechanism (based on how the drug affects the nervous system) that explains why the body could become addicted to the drug.

Extension

1. Debate the effects of drug use on society as a whole.