

BIO1300 The Human Animal
Topic 4: The brain, emotions and drugs

Key Words

Drugs of plant origin
Pharmaceuticals
Aspirin
Acetyl Salicylic Acid (ASA)
Willow tree bark (Salix species)
Recreational drugs
Plant secondary compounds
Not required for metabolism
Play protective role for plants
Anti-microbial
Spice use by humans
Prevent food rot
Bacteria inhibition
Cultural use of spices
More in meat dishes
Associated with hot climates
Origin of land plants
Silurian period
Non-vascular
Mosses
Followed by insects
Insect herbivory
History of insect damage
Plant defense
Physical defenses
Large herbivores
Dinosaurs
Mammals
Spines
Thorns
Glandular trichomes
Siliceous spicules
Chemical defenses
Alkaloids
Terpenes
Phenolics
Biological activity
Monoamine neurotransmitters
Dopamine
Norepinephrine
Serotonin

Common in all animals
Common descent
Cambrian explosion
Invertebrate nervous system
Vertebrate nervous system
Homologous
Same functioning
Similar structure
Monoamines of plant origin
Auxin
Phytohormone
Plant growth
Biological activity in animals
Biochemical pathway
Chemical modification
Addictions
Association with pain
Emotional pain
Physical pain
Dr. Gabor Maté
Addiction definition
Chronic use
Neurobiological disease
Craving
Compulsion
Harm
Narcotic
Non-narcotic
Drugs causing addictions
Canadian Journal of Medicine study
Not in most health patients
General Psychology study
US Vietnam soldiers
Returned addicted
Heroin
After war over addictions ceased
Crystal meth
Canada
Percent addicted vs. percent tried
Drug not cause of addiction
Lab rats
Self-administer cocaine
Living under stressed conditions
Rat Park
Dr. Alexander at SFU
Comfortable living conditions

Social environment
No interest in morphine
Addiction rats put in park
Lost the addictive craving
Even sugar solution didn't work
Drugs have addictive potential
Some animals susceptible
Happy animals are not
Access to drug is not problem
Psychology of emotions
Neurobiology
Stressed individuals vulnerable
Stable attachment
Rats in isolation
Dopamine receptors
Incentive-motivation system
Self-administering cocaine
Humans
Experience of trauma
Physical abuse
Sexual abuse
Emotional stress
Nurturing attachment relationship
Mood-enhancing drugs
Normal emotions
Social lubricants
Adverse Childhood Experiences (ACE)
Centre for Disease Control and
Prevention
Incidence of ACE
Increased addiction risks
National Institute on Drug Abuse
Women drug users
Victims of abuse
Effect of multiple forms of abuse
Symptoms of PTSD
Susceptibility to addictions
Pain and trauma
Chemical-based happiness system
Compensate with drugs and alcohol
Trauma and brain receptors
Underdevelopment of limbic system
Deficit in brain stimulation
Deficit in emotions
Compensated by drugs
Testimonials

Heroin like a warm hug
Addictions and the brain
Opioid apparatus
Attachment-reward
Endorphins
Dopaminergic system
Incentive-motivation
Feel-good chemicals
Self-regulation mechanisms
Pre-frontal cortex
Orbito-frontal cortex
Body-brain system
Stress response
Anxiety
Opiate abuse
Heroin
Morphine
Human emotions
Physical closeness
Emotional closeness
Endorphins
'Endogenous morphine'
Alcohol
Marijuana
Cocaine abuse
Dopamine increase
Prevents re-uptake
Addicts have fewer receptors
Stimulation up to normal levels
Effects on brain
Inhibits re-uptake
Stimulates dopamine production
Neurotransmitter effect
Cocaine
Crystal meth
Nicotine
Alcohol
Eating
Sex
Dopamine receptors and addictions
Addicted rats
Dopamine injections
Nucleus accumbens
Temporarily lost addiction
Began drinking again after wore off
Drug abuse and tolerance

Brain homeostasis
Over-stimulation reduces number of receptors
Need to take more for same high
Withdrawal symptoms
Reduced number of receptors
Brain understimulated
Irritability
Depression
Fatigue
Alcohol abuse
Childhood trauma
Self-regulate
Negative emotions
Painful emotions
Numbing
Temporary relief
Stress
Emotional distress
Trauma and PFC/OFC
Underdevelopment
Assessing emotions in others
Impaired decision-making
Short-term gain
Long-term consequences
Evaluation of risk
Uncertainty
Reinforces drug use
Harmful behaviours
Overvaluing drugs
Undervaluing important things
Relationships
Health
Job
Impairs judgment
Inhibiting impulses
There is hope
Brain is plastic
Can rewire connections
Can rebuild receptors
Not to remove drugs
Treat as patients of psychology
Remove haunting
Address traumas
Brain rebuild around healthy emotions

Psychedelic chemicals
Serotonin
Monoamine chemicals
DMT
Psilocybin
LSD
Mescaline
Present in gut receptors
Plant origin
Evolved to deter herbivory
Serotonin in mammal brain
Perception
Sense of self
Id
Ego
Super-ego
Space-time continuum
Hallucinations
Out of body experience
Objective view of self
Psychotherapy research
Military use in mind control
Hippies in San Francisco
Ken Kesey
Merry Pranksters
Grateful Dead
Acid parties
Tune in and drop out
Psychedelics and therapy
Treatment of psychological disorders
Addictions
Depression
Obsessive compulsive disorder
Post-traumatic stress disorder
Anxiety
Ayahuasca
Amazonian brew
Mono-amine oxidase inhibitors
Used in traditional rituals
Used for centuries
Being explored by western medicine
Addiction treatment
High success rate