Why should we avoid illicit drugs?

Lessons learned from laboratory animals.

Source Supported By:



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Substance abuse statistics in Malaysia (2018-2019)

Increasing trend among young adults and adults!!

Source:

National Anti-Drugs Agency Ministry of Home Affairs, Malaysia

in Malaysia 2018 & 2019 YEAR GENDER 2018 2019 Number of 2019: 2019 135,869 6,330 Drug and 130,788 Substance 142,199 2018: 2018: Abusers and 5,468 125,320 Addicts 15.8% 436: 100,000 404:100,000 100,000 population there 100,000 population there LEVEL OF are 404 abusers are 436 abusers Ratio CATEGORY 1:247 1:229 EDUCATION 1 addicts equivalent to 1 addicts equivalent to each 247 inhabitants each 247 inhabitants 50.0% Primary School Education (0-12 VTS) POLYDRUGS *2019: 91,684 2019: 11,700 -2018: 84,439 71.5 % Secondary 33.1% School 2019: 43,545 2019: Teenagers 15,166 Education (13-18 yrs) 2019: 72,151 2018: 2018: 64,168 8,841 *2019: 4,497 *2018: 4,327 Cannabis Tertiary TYPE 2.8% NON-POLYDRUGS Education Young People OF DRUGS * 2019: 1,826 2018: 3,491 ·2018 610 199.3% 4.2% 19.9% 0.04% Schooling Psychotropic **†** 718.7% (2 40 yrs) 2018:75 2019: 127,033 2018: 54,350 2018: 121,947

Comparison data by each category,

Drug and Substance Abusers and Addicts

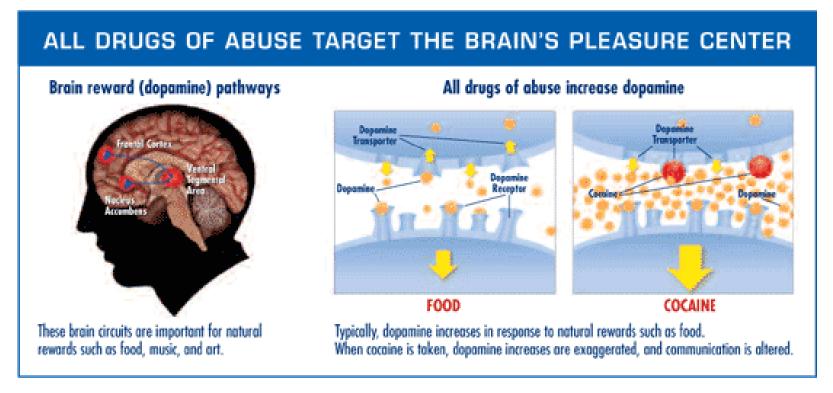


Behavioural Symptoms

Drug abuse tends to significantly alteraperson's behaviour and habits. Some drugs can impair the brain's ability to focus and think clearly.

- Increased aggression or irritability
- Changes in attitude or personality
- Lethargy
- Depression
- Posting very different messages on social media
- Dramatic changes in habits and/or priorities
- Involvement in criminal activity

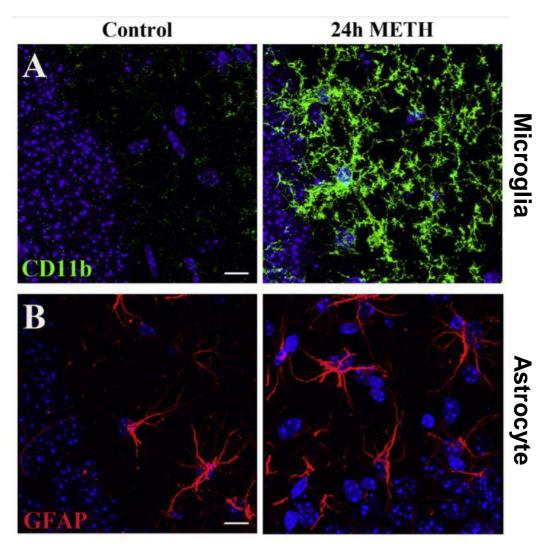
A reward circuit is activated by illicit drugs



Source: National Institute on Drug Abuse, National Institute of Health, USA

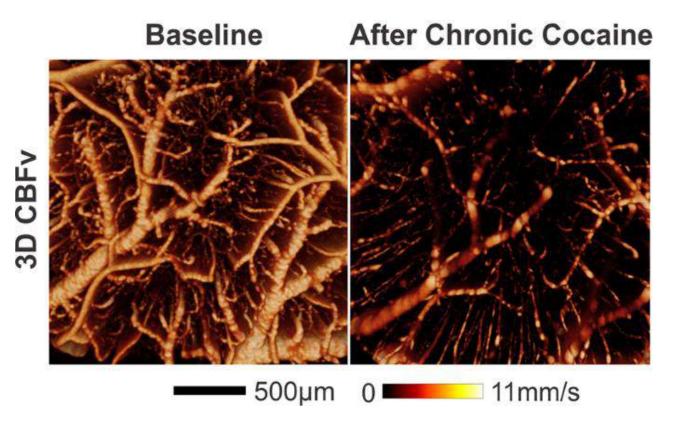
- Illicit drugs or psychostimulants can induce excitation, elevate moods, eg. "feeling high".
- However, the short-term pleasure may lead to long-term catastrophic consequences.

Learning and memory impairment



- 24 hours after a single dose of methamphetamine in mice, severe neuroinflammation can be observed in the hippocampus.
- Hippocampus is important for intellectual learning and memory storage.
- Prolonged neuroinflammation at neurons will lead to brain damage, thus impairing learning and memory capabilities.

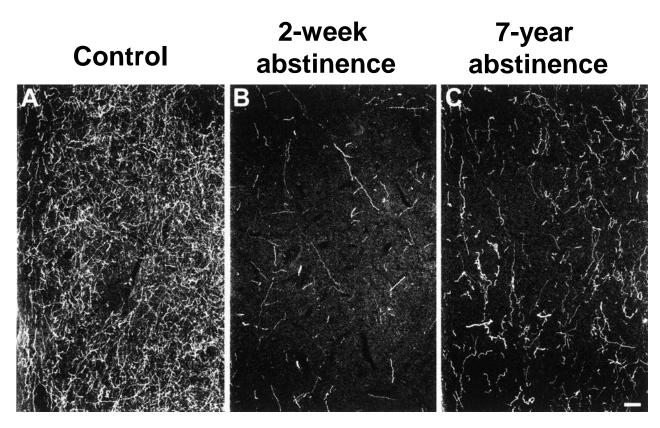
Cognitive impairment



Du et al (2020) Mol Psychiatry; 25(8):1759-1776

- Chronic cocaine exposure in mice causes reduced blood flow and vasoconstriction in blood vessels supplying the prefrontal cortex
- Prefrontal cortex is crucial for executive functions eg. attention, critical thinking, etc.
- This phenomenon would ultimately lead to impairment in cognitive function.

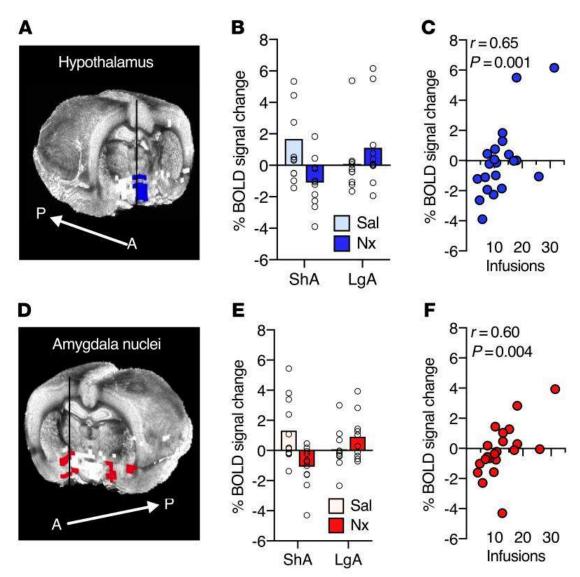
Prolonged brain injury caused by drug abuse



Hatzidimitrou et al (1999) J Neurosci ;19(12):5096-107

- In non-human primates, studies show that ecstasy dependence causes significant reduction in serotonin innervation density in the brain.
- Serotonin innervation is crucial for mood regulation.
- The innervation loss DID NOT recover even after 7 years of abstinence.

Negative emotions during withdrawal



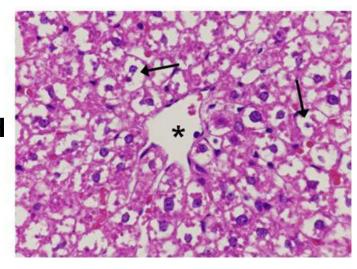
- In rats that are induced with heroin dependence, conditioned withdrawal treatment will cause abnormal activation of the amygdala and hypothalamus.
- This leads to negative emotional states.
- Withdrawal from drug addiction is an emotionally, mentally and physically challenging process, thus it is better to avoid getting addicted in the first place.

Carmack et al (2019) J Clin Invest; 129(6): 2480-2484.

Illicit drugs are also toxins to other organs

Repeated saline

Repeated METH



- In rats, repeated injection of methamphetamines caused severe damage in the liver tissue.
- Liver damage would cause severe health implications such as fatty liver change, liver fibrosis, etc.

Halpin & Yamamoto (2012) J Neurosci. 32(38):13155-63.

ROLE OF Pharmacists ON DRUG ABUSE PREVENTION & CONTROL

Documentation

Maintain and keep an original record of sales, purchases, acquisitions and deliveries of dangerous drugs.

Prevention

Contribute to substance abuse prevention and assistance program development.

Establish a multidisciplinary controlled-substance inventory system.

Work and collaborate with healthcare professional in identification, collection and detection substances of abuse.

Discouraging inappropriate prescribing practices.



Provide information and referral to support groups

Provide recommendations about the appropriate use, storage, handling, and proper disposal of pharmaceutical substances

Conduct research on substance abuse and addiction.



Assist in the identification of individuals with substance abuse-related problems.

Support and encourage the recovery of individuals.

Contribute to pharmacotherapeutic elements of drug detoxification protocols.







CURE AND CARE 1MALAYSIA (C&C 1MALAYSIA) "PEMULIHAN & PRIHATIN 1MALAYSIA".



Take home message



DON'T LOSE YOUR LIFE TO DRUGS

Source: National Anti-Drugs Agency Ministry of Home Affairs, Malaysia Source: Narcotics Division, Security Bureau, Hong Kong





