

PSYC1022: The Psychology of Addiction

Topic 1: Origins & Manufacture of addictive drugs (I)

Dr. Helena Pacitti

Outline:

- Drug Classifications
- Depressants:
 - Alcohol
 - Opium
 - Morphine
 - Laudanum
 - Codeine
 - Heroin



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Drug Classification

- Drugs can be classified in many different ways
- One method involves classification based on the drug's CNS effects
 1. Depressants:
 - Slow down CNS activity
 2. Stimulants:
 - Speed up CNS activity
 3. Hallucinogens:
 - Alter sensory perceptions (psychotogenic) by interfering with CNS signalling
 4. Others:
 - Do not fit neatly into other categories
 - Fall into several categories
 - Different experiences between individuals
 - <http://www.health.gov.au/internet/publications/publishing.nsf/Content/drugtreat-pubs-front6-wk-toc~drugtreat-pubs-front6-wk-secb~drugtreat-pubs-front6-wk-secb-3~drugtreat-pubs-front6-wk-secb-3-1>

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Depressants

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Alcohol

- Can be made simply by leaving fruit in a container for a period of time
- Paleolithic humans may have consumed alcohol but there is little direct evidence
- 7000-5800BC: first direct evidence of alcohol production
 - Jiahu, China
 - Archeological site (Neolithic era)
 - pots were found to contain the residue of an alcoholic liquid made from fermented rice, honey & hawthorn
 - 'Chateau Jiahu': reverse engineered from molecular archaeology

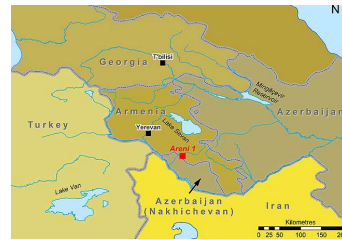


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Alcohol

- 4100BC: Areni-1 cave, Armenia

- one of the earliest known sites of wine production
- The press sits inside the cave & is slanted downwards towards the mouth of a large jar inserted in the platform's edge to catch the crushed grape juice.
- This same design of wine press was common throughout the Mediterranean till 1900.

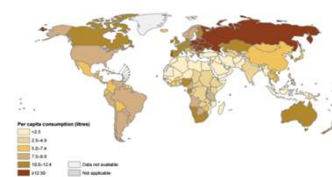


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Alcohol

- 6.2 litres of pure alcohol per 15+ person (13.5g per day)
- Higher economic wealth of a country the higher consumption is
 - Highest rates in Europe, Russia, Australia, Canada
 - Unrecorded (i.e. home-brewed liquor) is thought to account for almost 25% of worldwide consumption
 - 3.3 million deaths worldwide are attributable to alcohol consumption
 - [WHO World Drug Report](#)

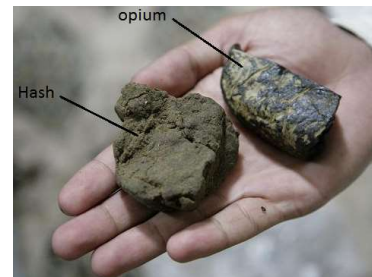
Figure 2. Total alcohol per capita consumption (15+ years; in litres of pure alcohol), 2010



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Opium

- Opium is derived from the sap produced by the opium poppy seed head. The sap is released following tissue damage.
 - Sap acts as an anti-herbivore chemical
- Opium farmer makes incisions to damage tissue, then sap is collected and dried
 - opium brick is typically sold by the farmer to a broker.
- Historically, opium was the end product
 - more recently, opium sold to refiners who convert it into morphine or heroin.
- Selective breeding has yielded an opium poppy that has substantially higher concentrations of opioids than the wild variant.



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Opium

- 10,000-2000 BC: used broadly throughout Europe, Asia, Middle East & North Africa
 - 4200 BC: archaeological sites of opium buried in a ritual or sacred context.
 - Brittany, France:
 - ceramic bowls found in a sacred site
 - Southern Spain:
 - bags of opium capsules were found in a burial site



Rudgley (1995)

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Opium

- 1500 BC: the Ebers papyrus
 - found between the legs of a mummy in a tomb near Luxor, Egypt
 - describes a mixture of opium & another material which was found to be effective in quietening crying children.
 - In antiquity, children in Egypt, India & Europe were being soothed with opium.
- (Aggrawal, 1995).
- 1332-1323 BC: Cultivation & trade of opium was in full operation during the reign of King Tutankhamun.
 - 700 BC: Homer's 'The Odyssey'
 - opium's recreational use is described



The Ebers Papyrus

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Morphine

- 1803: Morphine was isolated by the German pharmacist, Friedrich Sertürner
 - added the morphine crystals to food to kill unwanted rats & dogs
 - observed that morphine evoked sleep & ultimately death
 - He suffered from gout in his later life & quelled his pain with the very morphine he had isolated.
- The alkaloid morphine is generally 8 to 14% of the dry weight of opium.
- Sertürner's Morphine extraction method still used in illicit labs today.



Friedrich Sertürner
1783-1841

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Laudanum

1493-1541: Paracelsus, a Swiss-German occultist

- discovered that opium could be better dissolved into a solution of alcohol rather than water.
 - named solution Laudanum
 - Although an effective analgesic, the compound was largely ignored.

1624-1689: Thomas Sydenham, English physician

- produced & promoted his own Laudanum recipe
 - cure for a range of medical conditions.



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Laudanum

- 1837-1901: Laudanum remains available by prescription although therapeutic applications are generally restricted to pain relief & alleviating withdrawal symptoms in babies born to heroin or opiate addicted mothers.
- 1910 onwards: increasingly restrictive laws established which regulated the production & sale of addictive compounds, including Laudanum.



Advert for Laudanum & Paregoric, c. 1897.



Mrs. Winslow's Soothing Syrup, c. 1849.

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Codeine

- alkaloid present in opium at a concentration of about 1-3%.
- 1821: Pierre Robiquet (French chemist)
 - Isolated codeine from morphine using the process of O-methylation
 - used as an analgesic (pain), antitussive (coughing), antidiarrheal, antihypertensive (blood pressure), antianxiety, sedative, to suppress premature labour contractions & myocardial infarction (heart attack).
 - It does have addictive potential but is less potent than morphine or heroin.



Pierre Robiquet

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Heroin

- 1874: diacetylmorphine, first synthesised by English chemist, Charles Wright
 - he accidentally boiled morphine & acetic acid, over a stove for several hours.
 - This process of acetylation introduces an acetyl group into the compound.
- The modern technique entails a complicated series of steps in a good laboratory (Booth, 1999)



Charles Wright

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Heroin

1898: Felix Hoffmann, German chemist

- worked at Bayer & discovered aspirin by subjecting salicylic acid to the same acetylation process that Charles Wright had applied to morphine.
- Hoffmann replicated this procedure & named the resulting diacetylmorphine, heroin, in reference to its heroic effects
- Bayer marketed heroin as an effective sedative for coughs, like morphine, but without the addictive potential
 - sales rocketed & widespread dependence followed

1913: Bayer ceased production with the introduction of widespread legislation to control the production & sale of such compounds.

