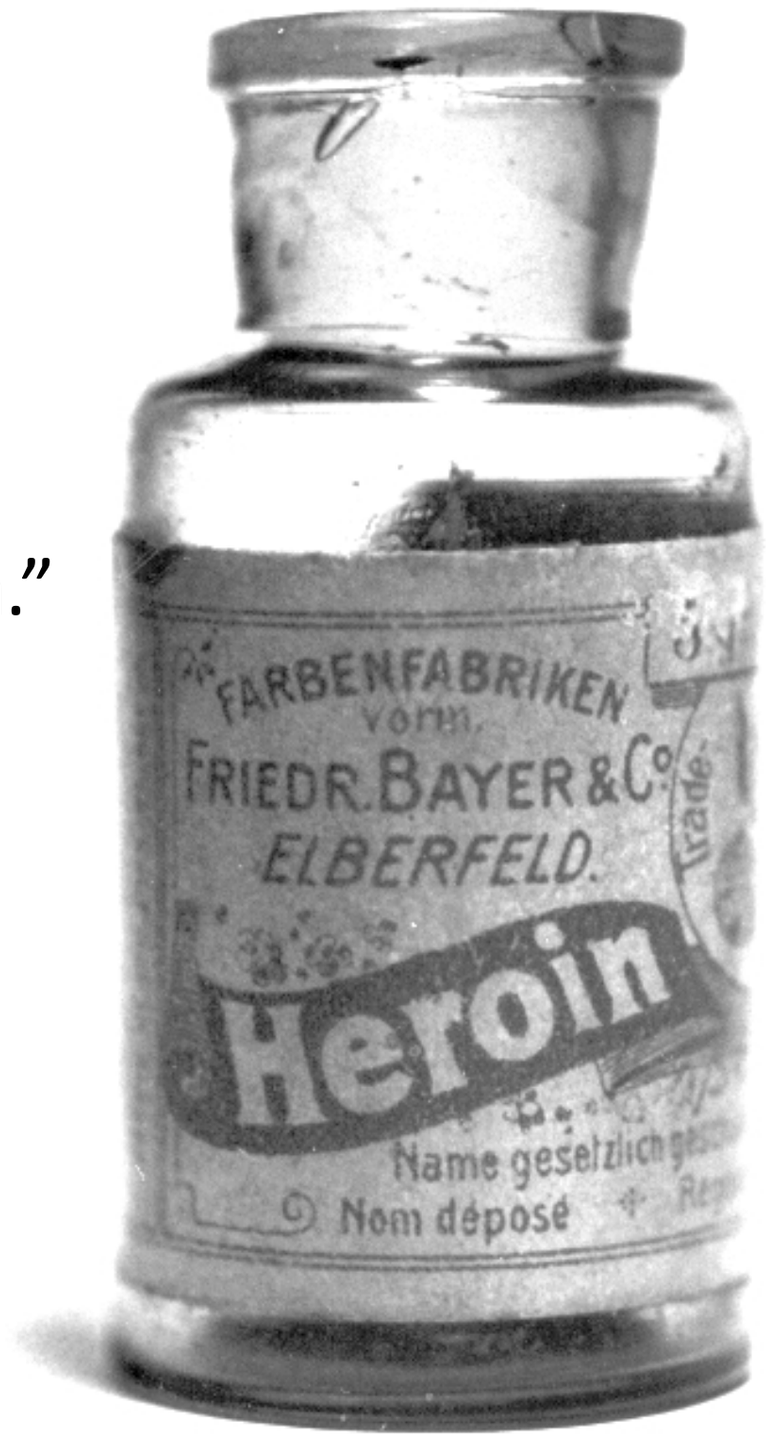
Drogas de abuso

Jorge Hernán Ramírez. MD, MSc, PhD

“Posee muchas ventajas sobre la Morfina:
No es hipnótico y no hay peligro de adicción.”
Boston Medical Journal 1900



Contenidos

- Definición de adicción
- Mecanismos de adicción
- Criterios de adicción
- Tipos de sustancias de abuso

ADICCION

Desorden crónico y recurrente en el que la búsqueda y consumo compulsivo de psicofármacos persiste sin importar las serias consecuencias negativas que acompañan su uso.

Teorías de adicción

- “Liking” ------ “Wanting”
- Deficits en la corteza prefrontal
- Factores ambientales – geneticos
- Factores propios de la sustancia de abuso

ADICCION

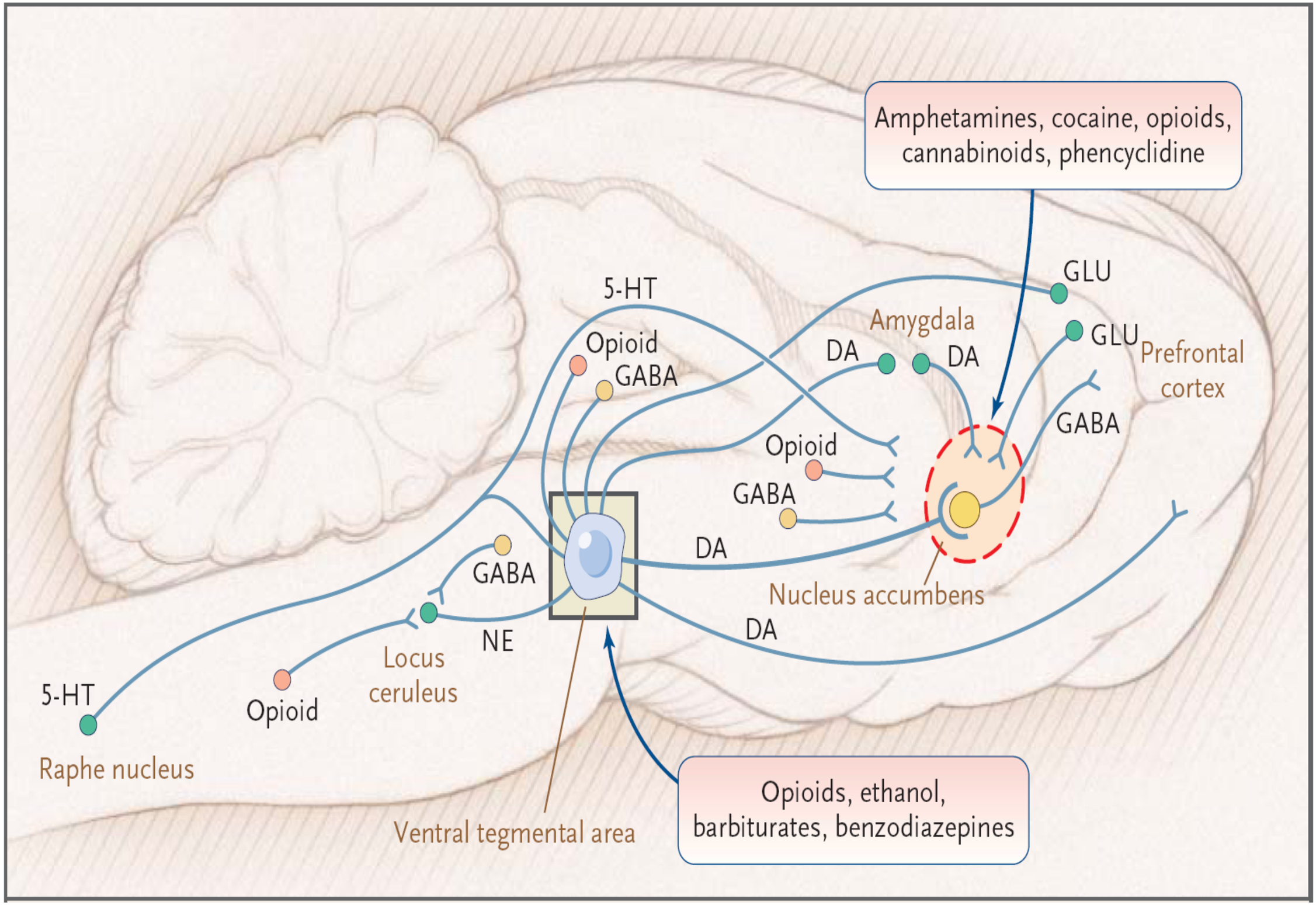
Dependencia a sustancias

- Síntomas de tolerancia.
- Síntomas de retirada.
- Uso de una sustancia a mayores dosis y por periodos mas largos de lo planeado.
- Deseos infructuosos de suspender o reducir su uso.
- Gastar considerable tiempo y esfuerzo (y…. Dinero!) en conseguir la sustancia.
- Reducción en actividades sociales, ocupacionales o recreacionales por consumir la sustancia.
- Continuar el uso de la sustancia pese a los problemas sociales, económicos o de salud que acompañan su uso.

ADICCION

- Mecanismos de tolerancia
- Cambios fisiológicos y estructurales con el abuso de sustancias
- “Priming” → Recaida!!
- “Craving”

Circuito de recompensa cerebral



Misuse of Drugs Act Classification

	Class in Misuse of Drugs Act	Comments
Ecstasy	A	Essentially 3,4-methylenedioxy-N-methylamphetamine (MDMA)
4-MTA	A	4-methylthioamphetamine
LSD	A	Lysergic acid diethylamide
Cocaine	A	Includes crack cocaine
Heroin	A	Crude diamorphine
Street methadone	A	Diverted prescribed methadone
Amphetamine	B	..
Methylphenidate	B	eg, Ritalin (methylphenidate)
Barbiturates	B	..
Buprenorphine	C	eg, Temgesic, Subutex
Benzodiazepines	C	eg, Valium (diazepam), Librium (chlordiazepoxide)
GHB	C	Gamma 4-hydroxybutyric acid
Anabolic steroids	C	..
Cannabis	C	..
Alcohol	..	Not controlled if over 18 years in UK
Alkyl nitrites	..	Not controlled
Ketamine	..	Not controlled at the time of assessment; controlled as class C since January, 2007
Khat	..	Not controlled
Solvents	..	Not controlled; sales restricted
Tobacco	..	Not controlled if over 16 years in UK

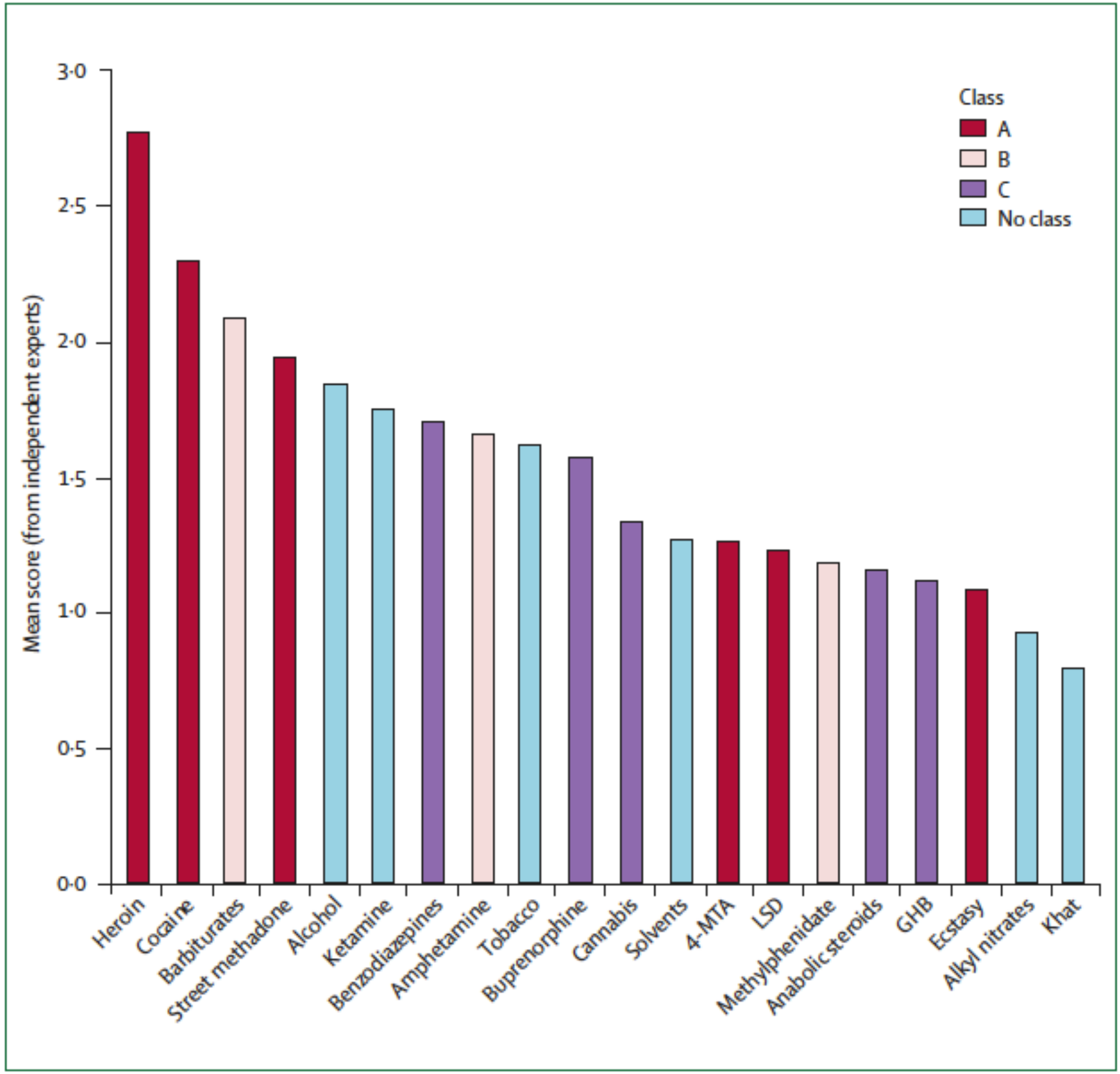
Table 2: **The 20 substances assessed, showing their current status under the Misuse of Drugs Act**

Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
Khat	0·50	0·3	1·2	0	1·04	1·6	1·2	0·3	0·85	0·7	1·1	0·8

Table 3: Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

Nutt D, et al. The Lancet. Vol 369 March 24, 2007


Mean score (from independent experts)
3·0
2·5
2·0
1·5
1·0
0·5
0·0
Class
A
B
C
No class
Heroin
Cocaine
Barbiturates
Street methadone
Alcohol
Ketamine
Benzodiazepines
Amphetamine
Tobacco
Buprenorphine
Cannabis
Solvents
4-MTA
LSD
Methylphenidate
Anabolic steroids
GHB
Ecstasy
Alkyl nitrates
Khat

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	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
Khat	0·50	0·3	1·2	0	1·04	1·6	1·2	0·3	0·85	0·7	1·1	0·8

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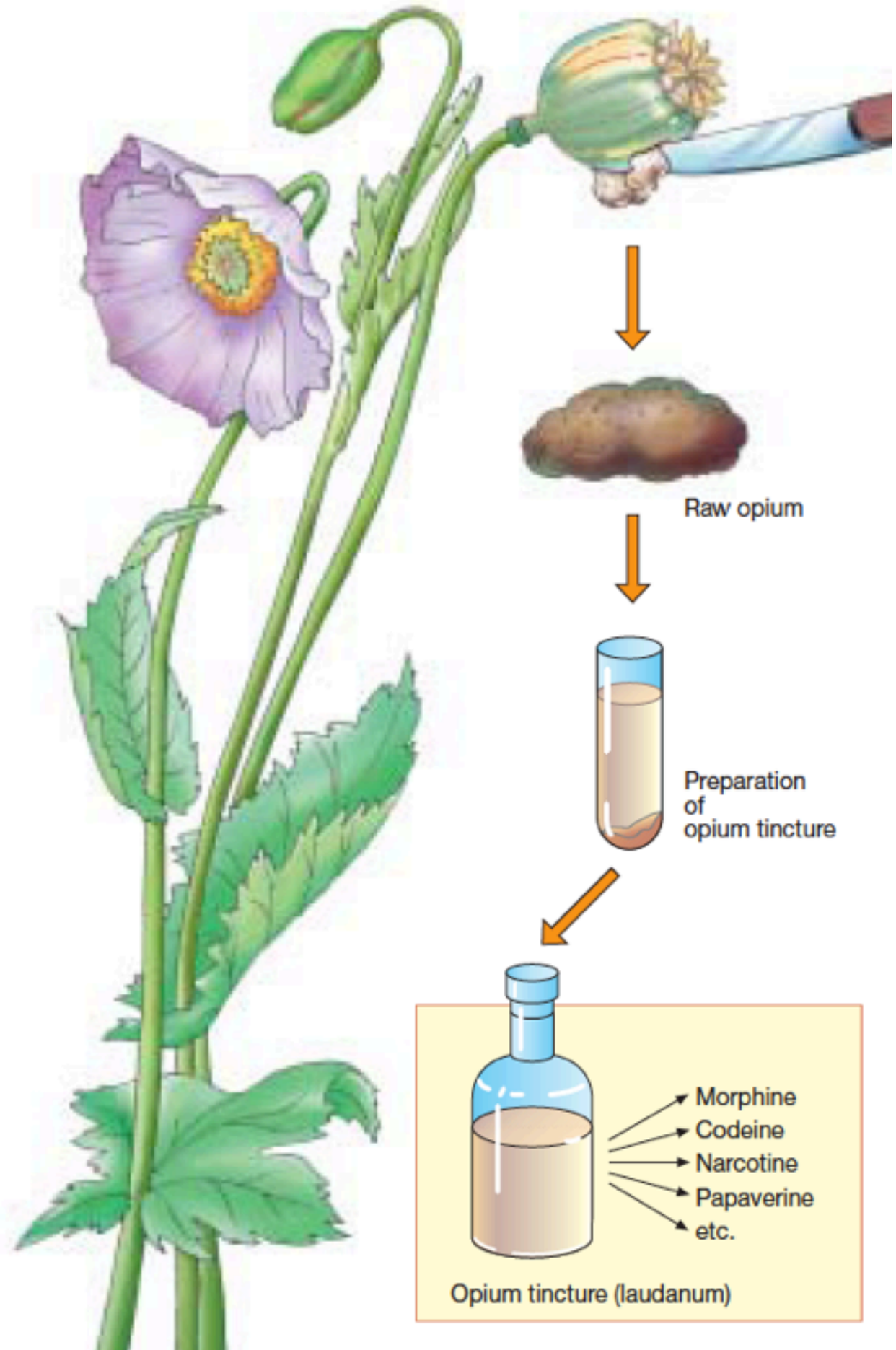
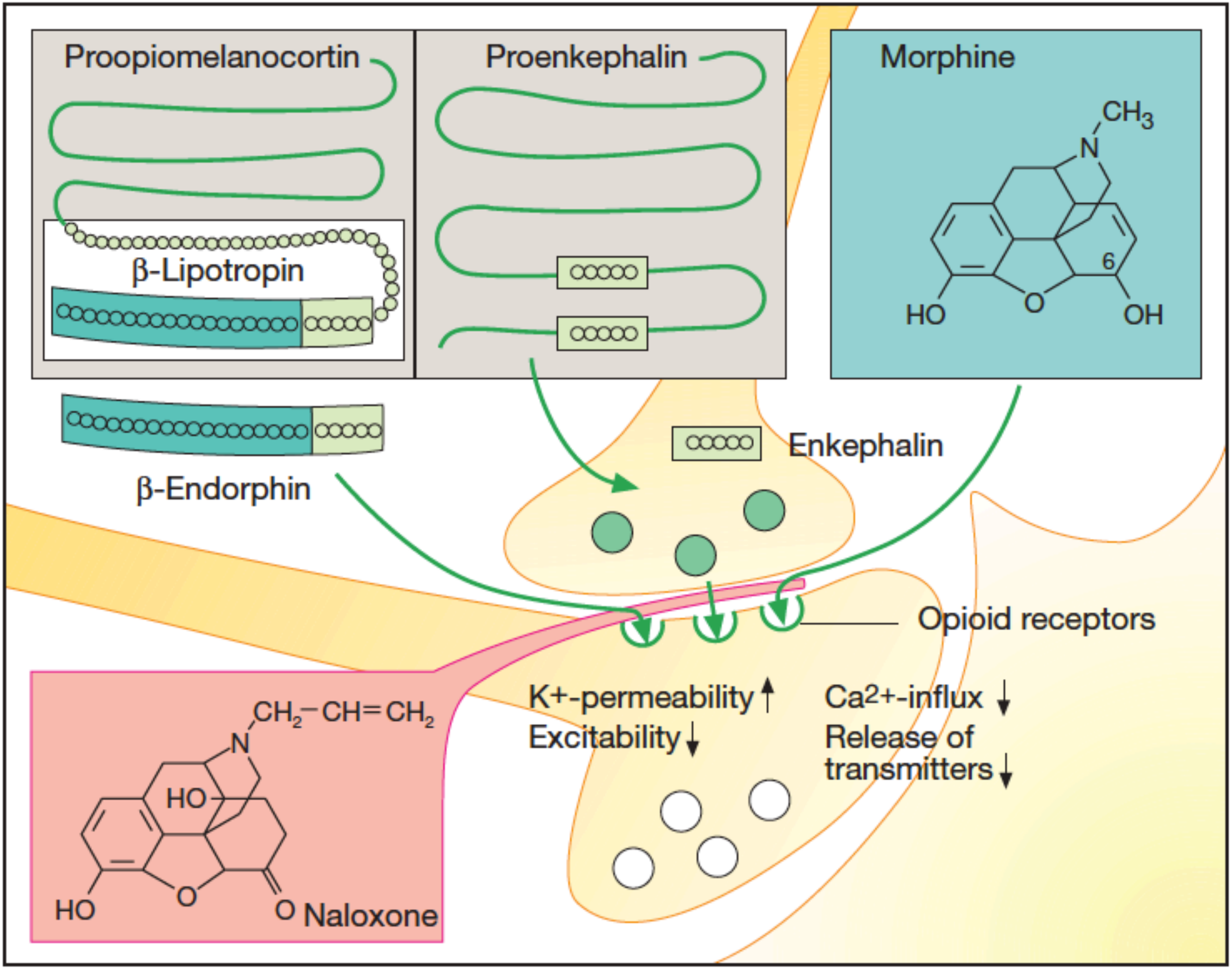
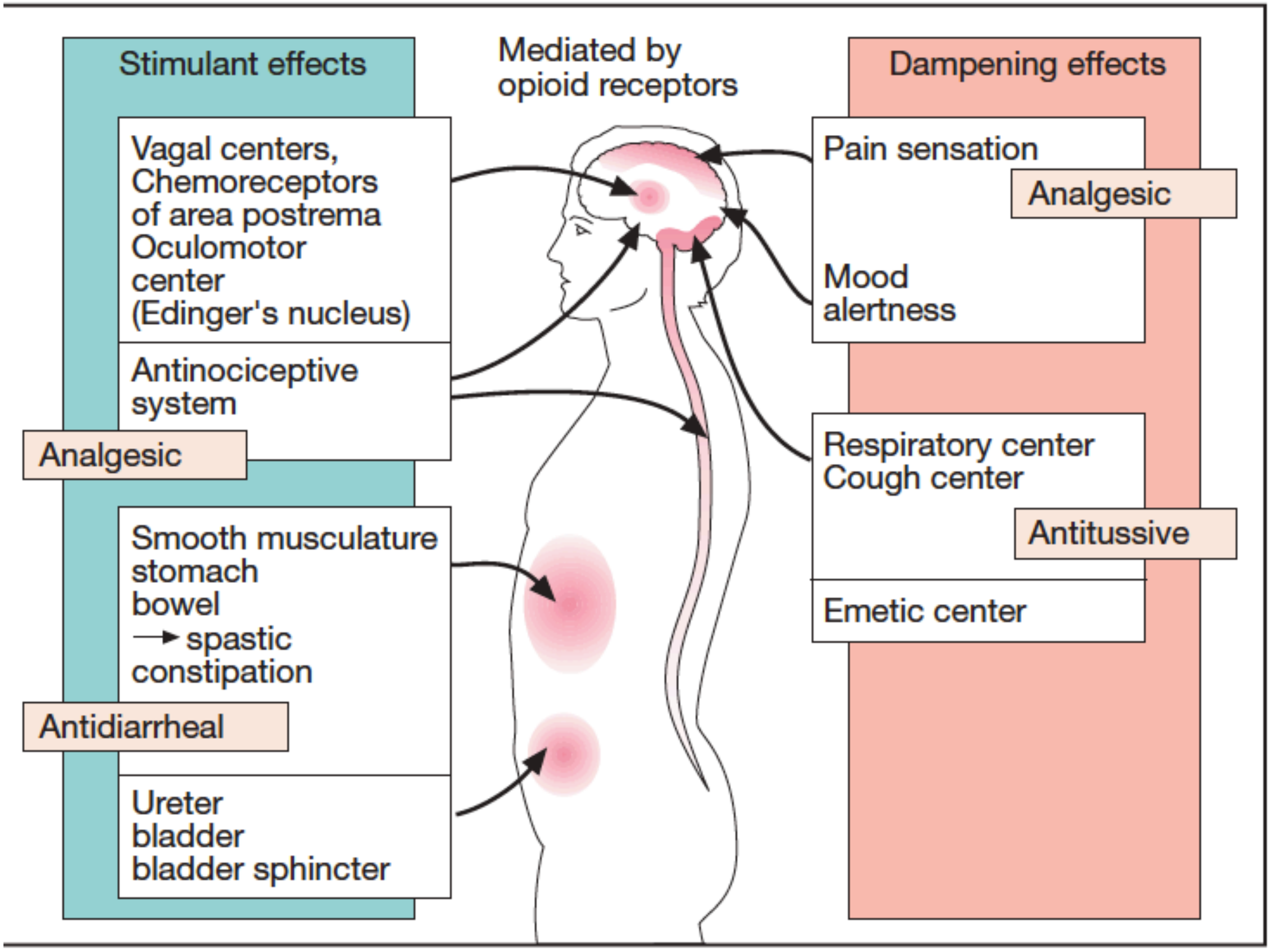
Nutt D, et al. The Lancet. Vol 369 March 24, 2007

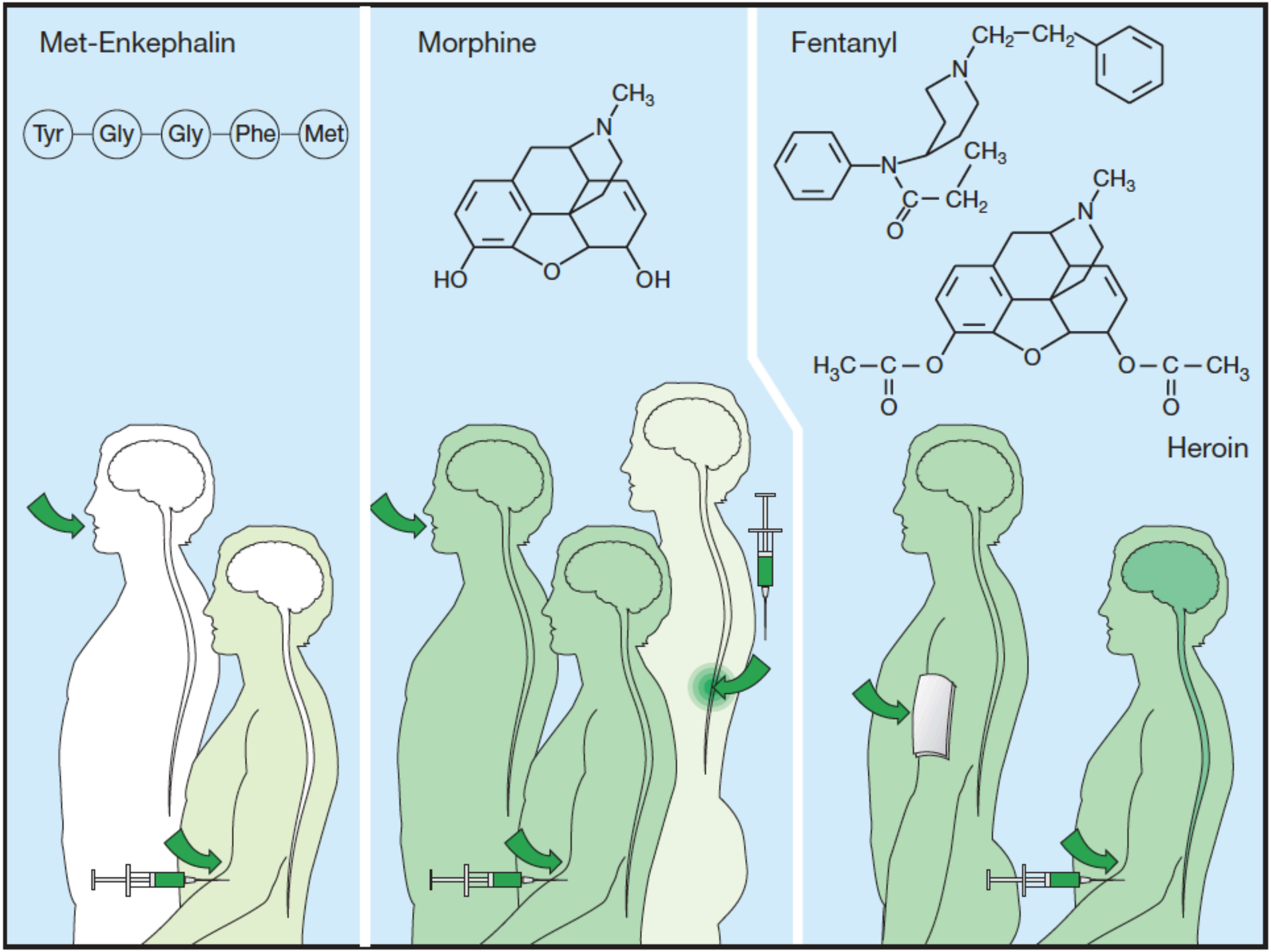
OPIOIDES

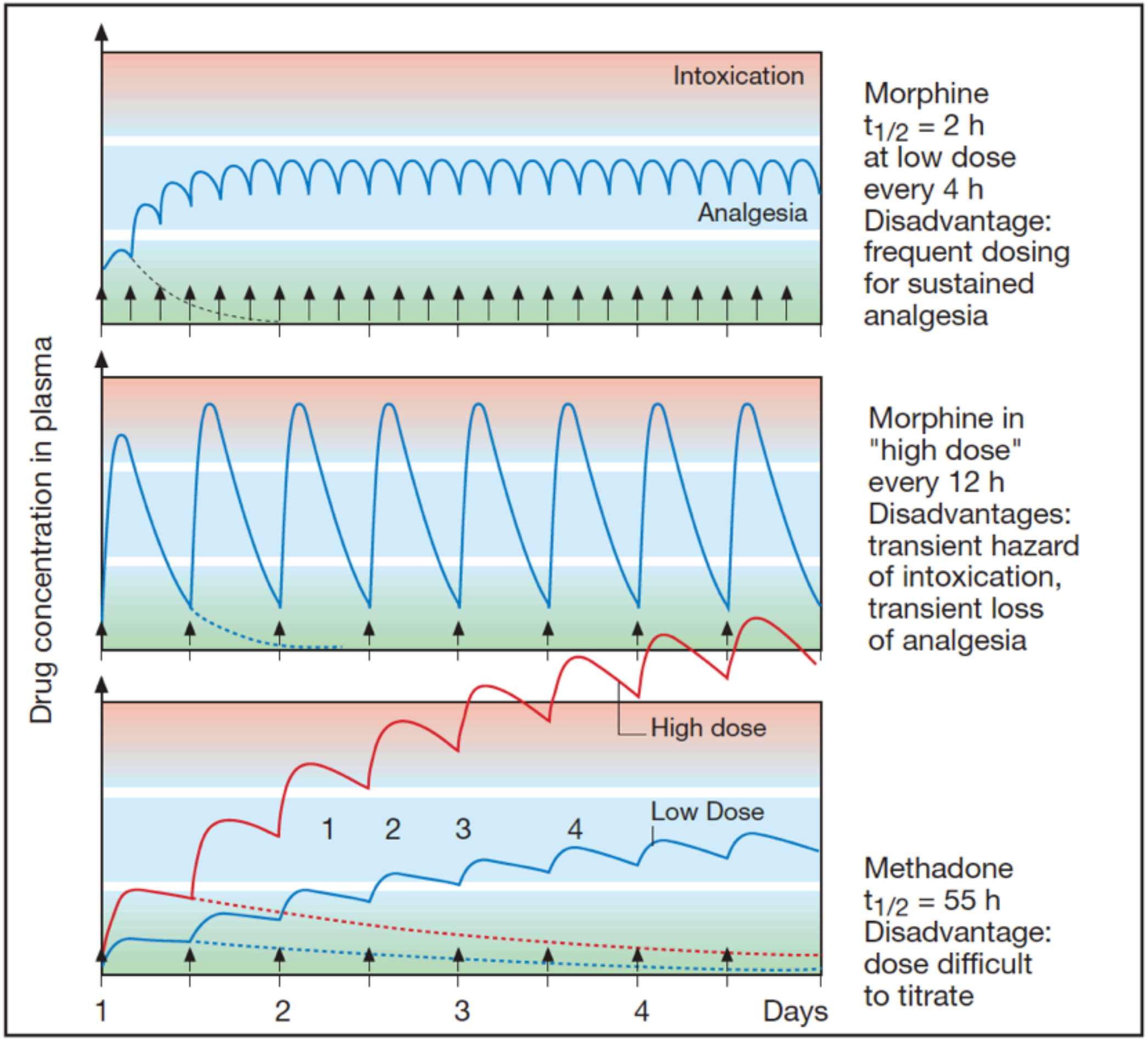

Raw opium
Preparation
of
opium tincture
Morphine
Codeine
Narcotine
Papaverine
etc.
Opium tincture (laudanum)



A. Action of endogenous and exogenous opioids at opioid receptors


Stimulant effects
Mediated by opioid receptors
Dampening effects
Vagal centers, Chemoreceptors of area postrema Oculomotor center (Edinger's nucleus)
Antinociceptive system
Analgesic
Smooth musculature stomach bowel → spastic constipation
Antidiarrheal
Ureter bladder bladder sphincter
Pain sensation
Analgesic
Mood alertness
Respiratory center Cough center
Antitussive
Emetic center


Met-Enkephalin
Tyr
Gly
Gly
Phe
Met
Morphine
CH3
N
HO
O
OH
Fentanyl
CH2–CH2
N
N
CH3
C – CH2
O
CH3
N
H3C–C–O
O
O
O–C–CH3
O
Heroin


Intoxication
Analgesia
Morphine
$t_{1/2}$ = 2 h
at low dose
every 4 h
Disadvantage:
frequent dosing
for sustained
analgesia
Morphine in
"high dose"
every 12 h
Disadvantages:
transient hazard
of intoxication,
transient loss
of analgesia
Drug concentration in plasma
High dose
Low Dose
1
2
3
4
Methadone
$t_{1/2}$ = 55 h
Disadvantage:
dose difficult
to titrate
1
2
3
4
Days

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	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
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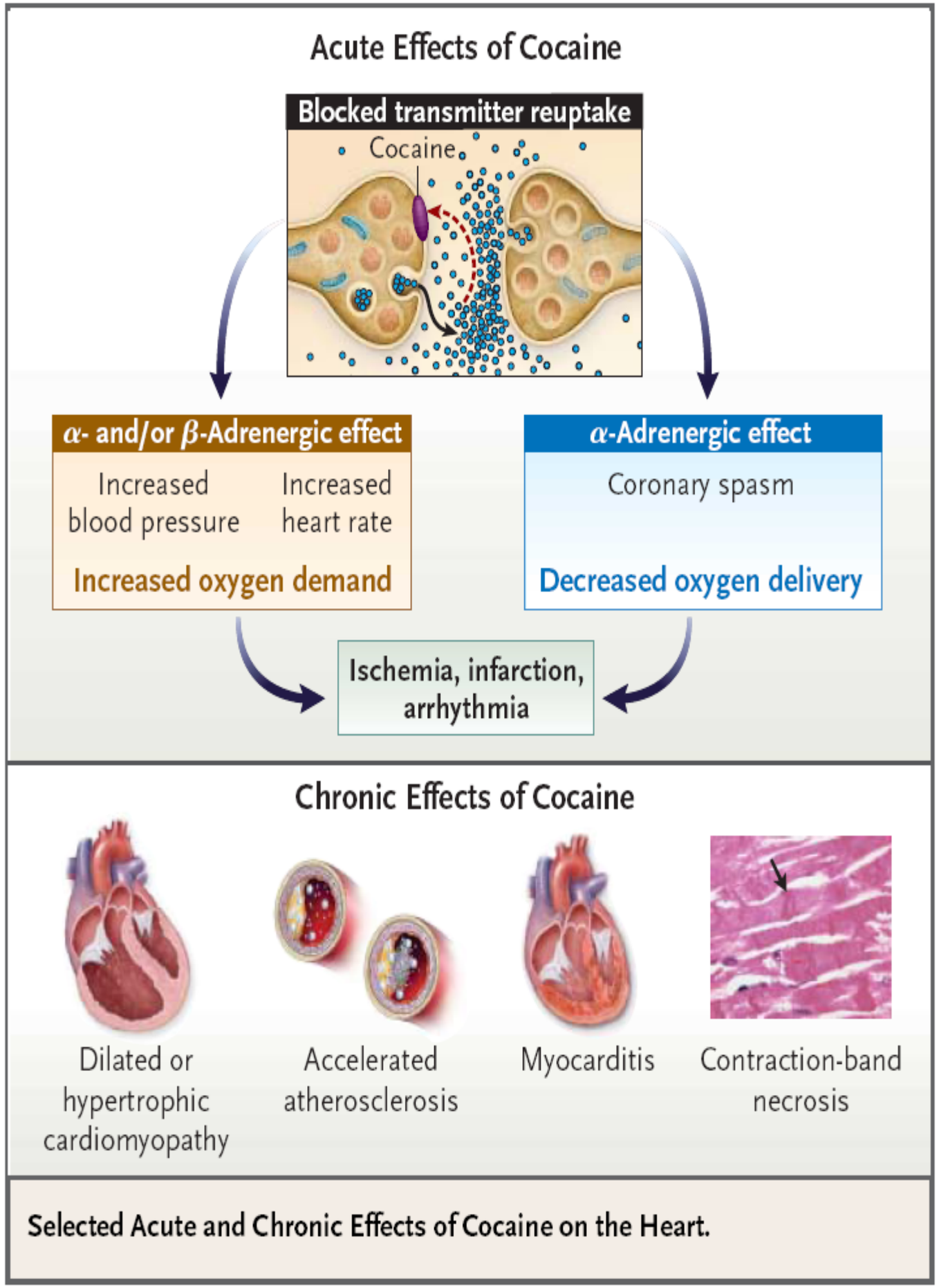
INTOXICACION POR COCAINA

SINTOMAS

- Ansiedad, delirios, alucinaciones, convulsiones
- Cefalea
- Midriasis
- Taquicardia
- Palidez

COMPLICACIONES

- ACV - HSA
- Rabdomiolisis
- Isquemia aguda de miembros inferiores (EVPA)
- Infarto
- Arritmias



Selected Acute and Chronic Effects of Cocaine on the Heart.

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	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
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Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
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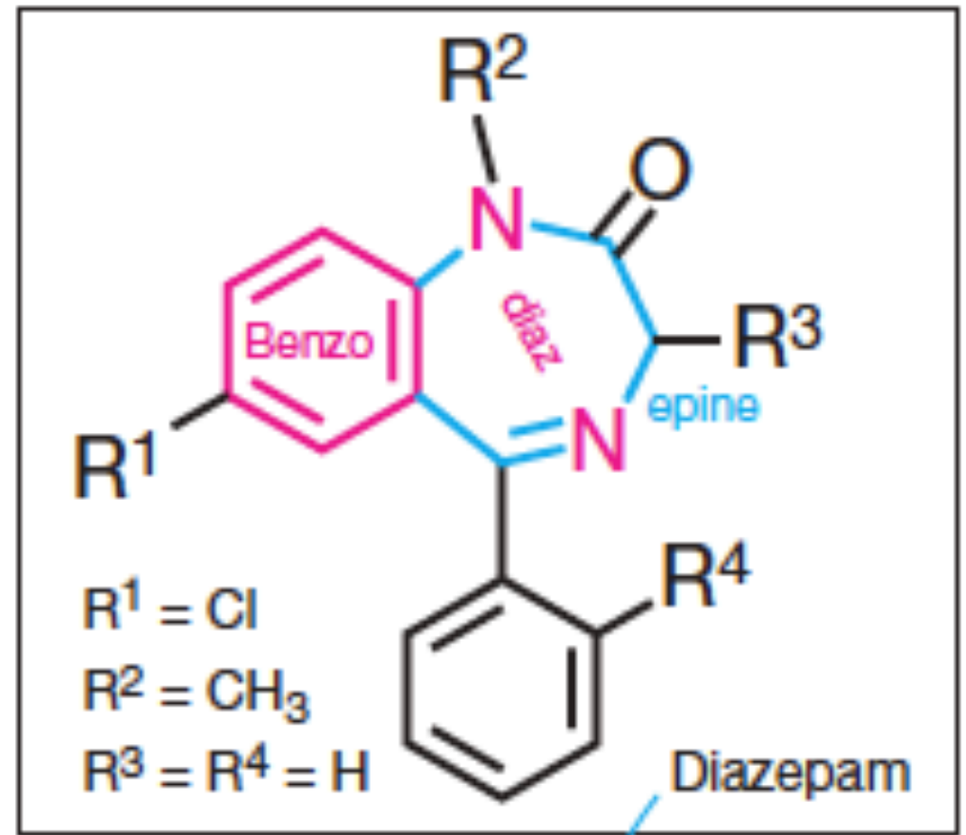
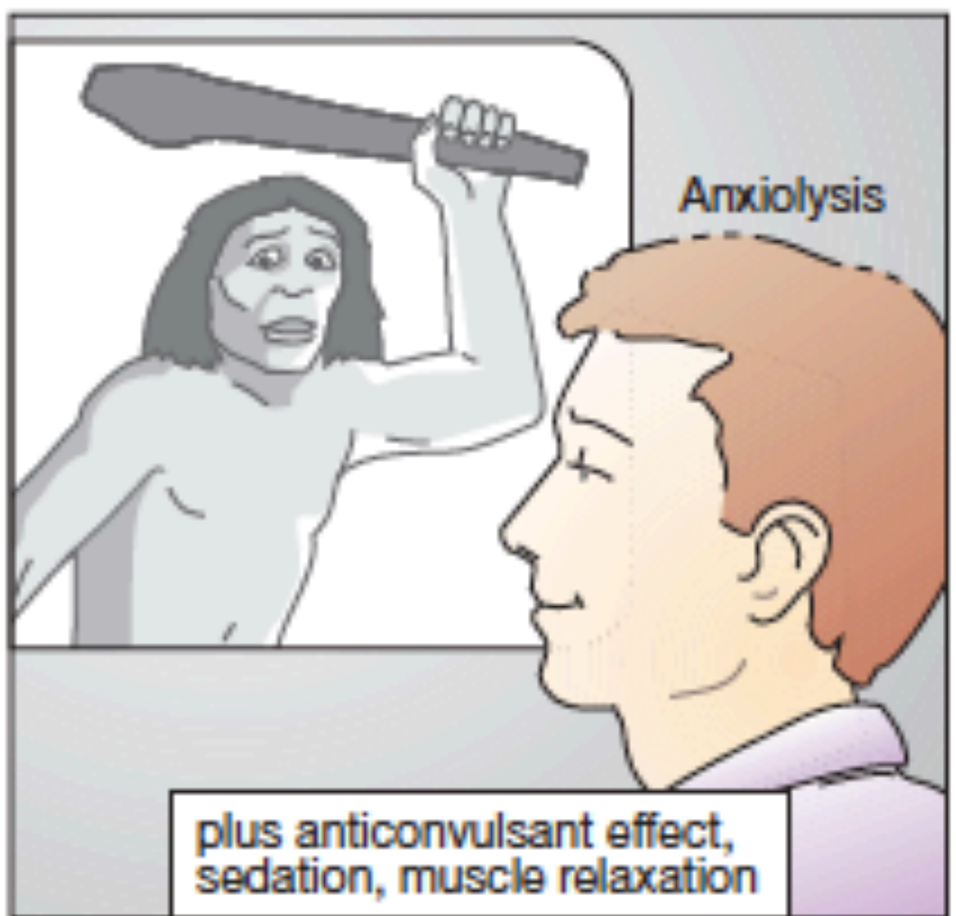
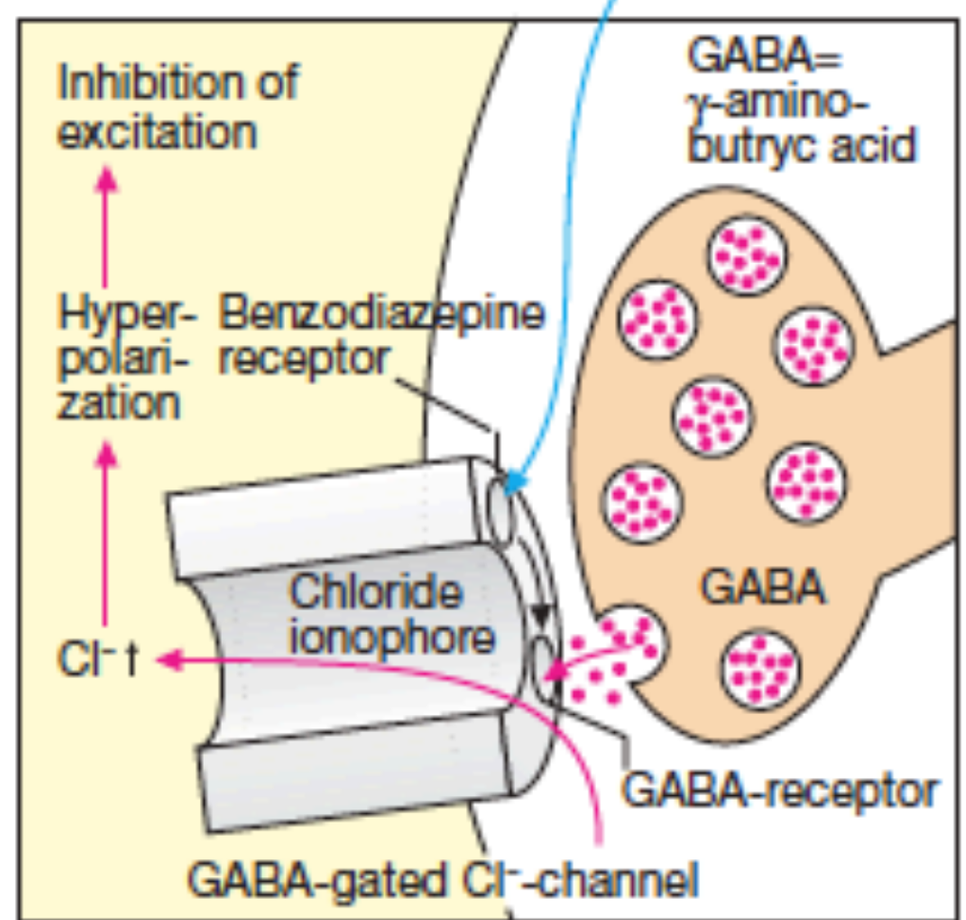
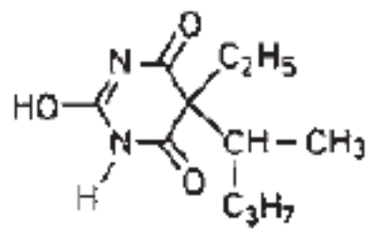

R2
O
N
Benzo
diaz
R3
epine
N
R1
R4
R1 = Cl
R2 = CH3
R3 = R4 = H
Diazepam


Anxiolysis
plus anticonvulsant effect,
sedation, muscle relaxation

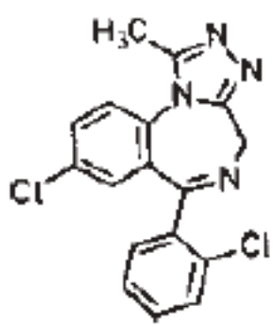

Inhibition of
excitation
GABA=
γ-amino-
butryc acid
Hyper-
polari-
zation
Benzodiazepine
receptor
Chloride
ionophore
GABA
Cl⁻↑
GABA-receptor
GABA-gated Cl⁻-channel

Barbiturates:

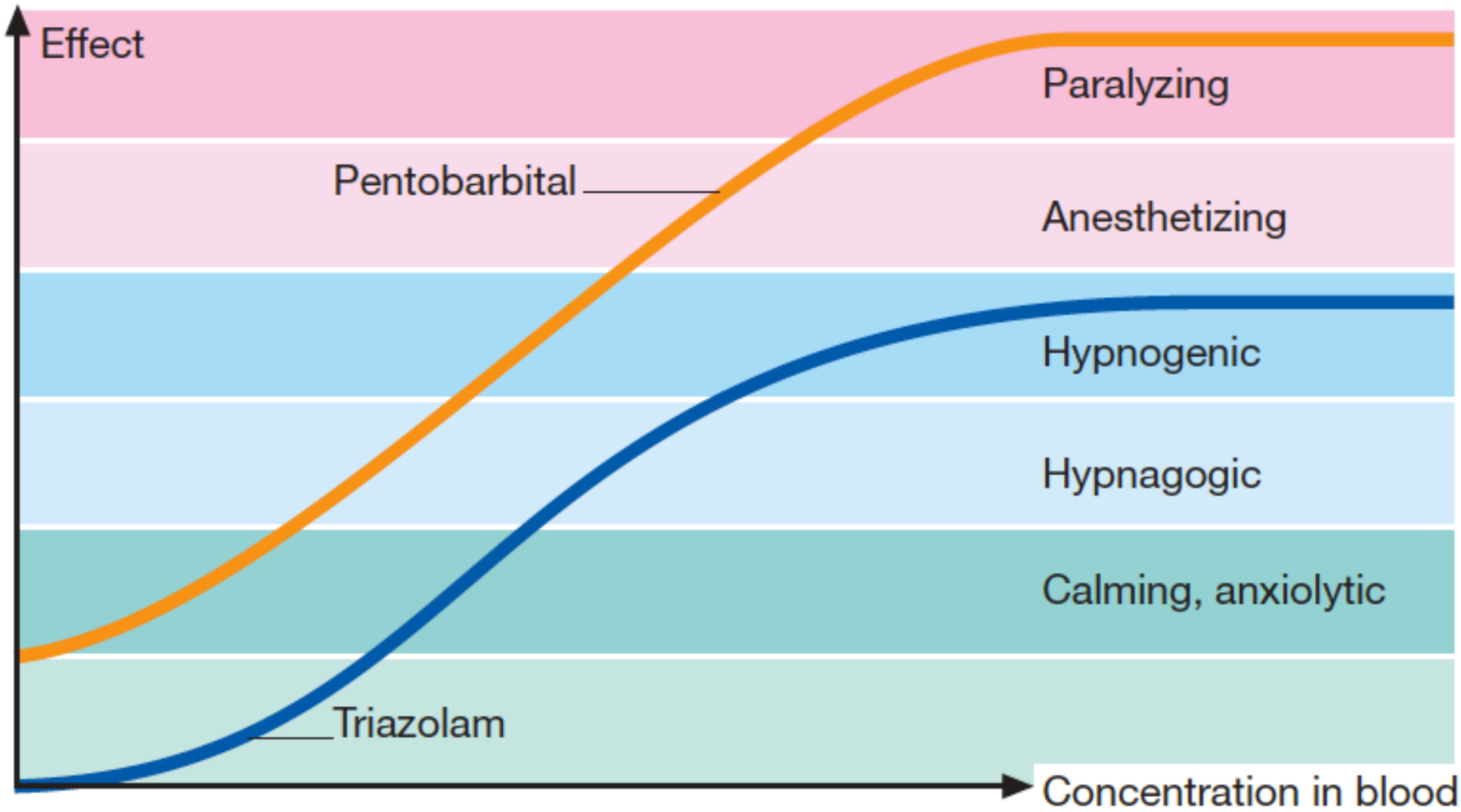


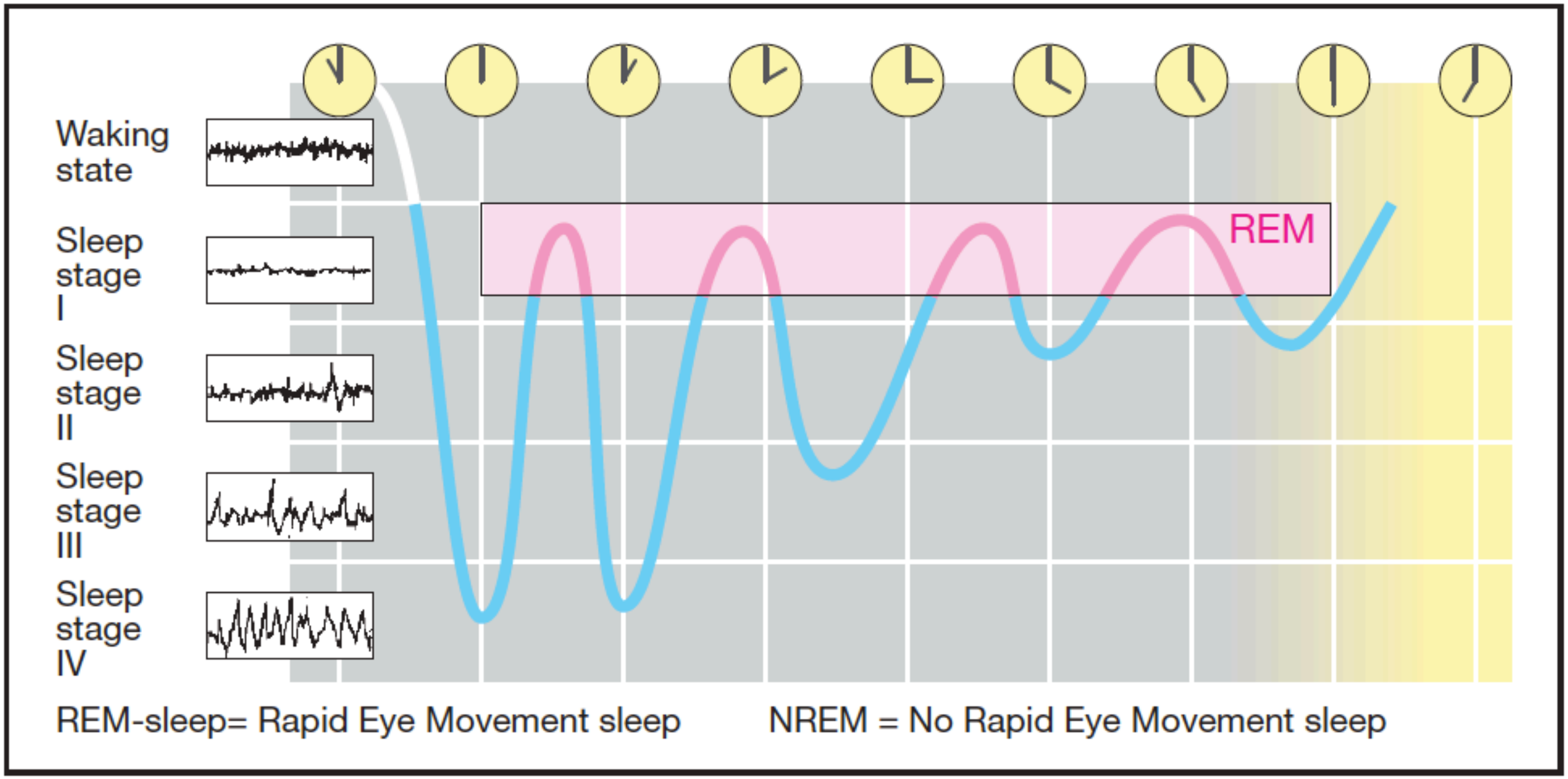
Pentobarbital

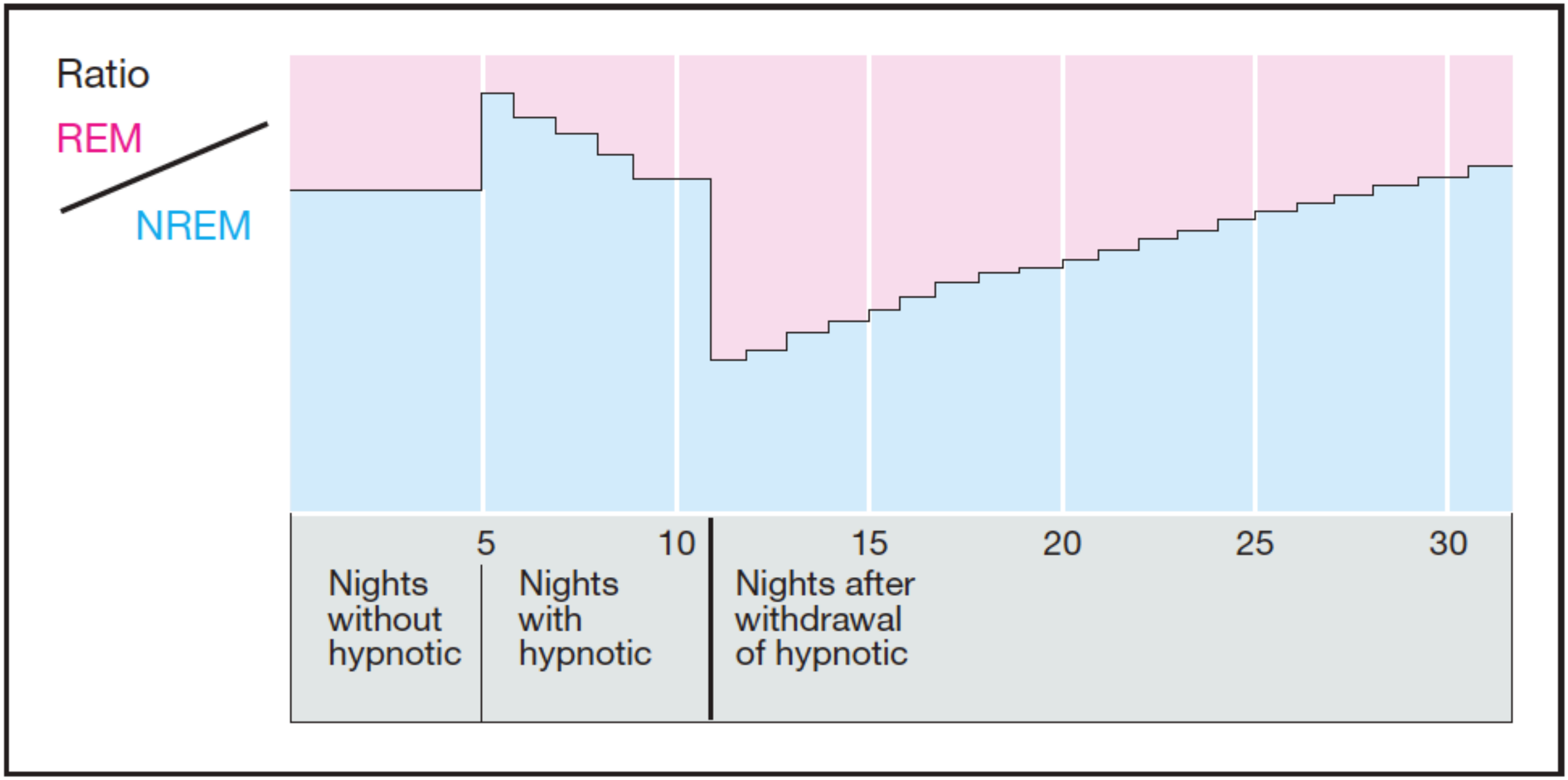
Benzo-
diazepines:

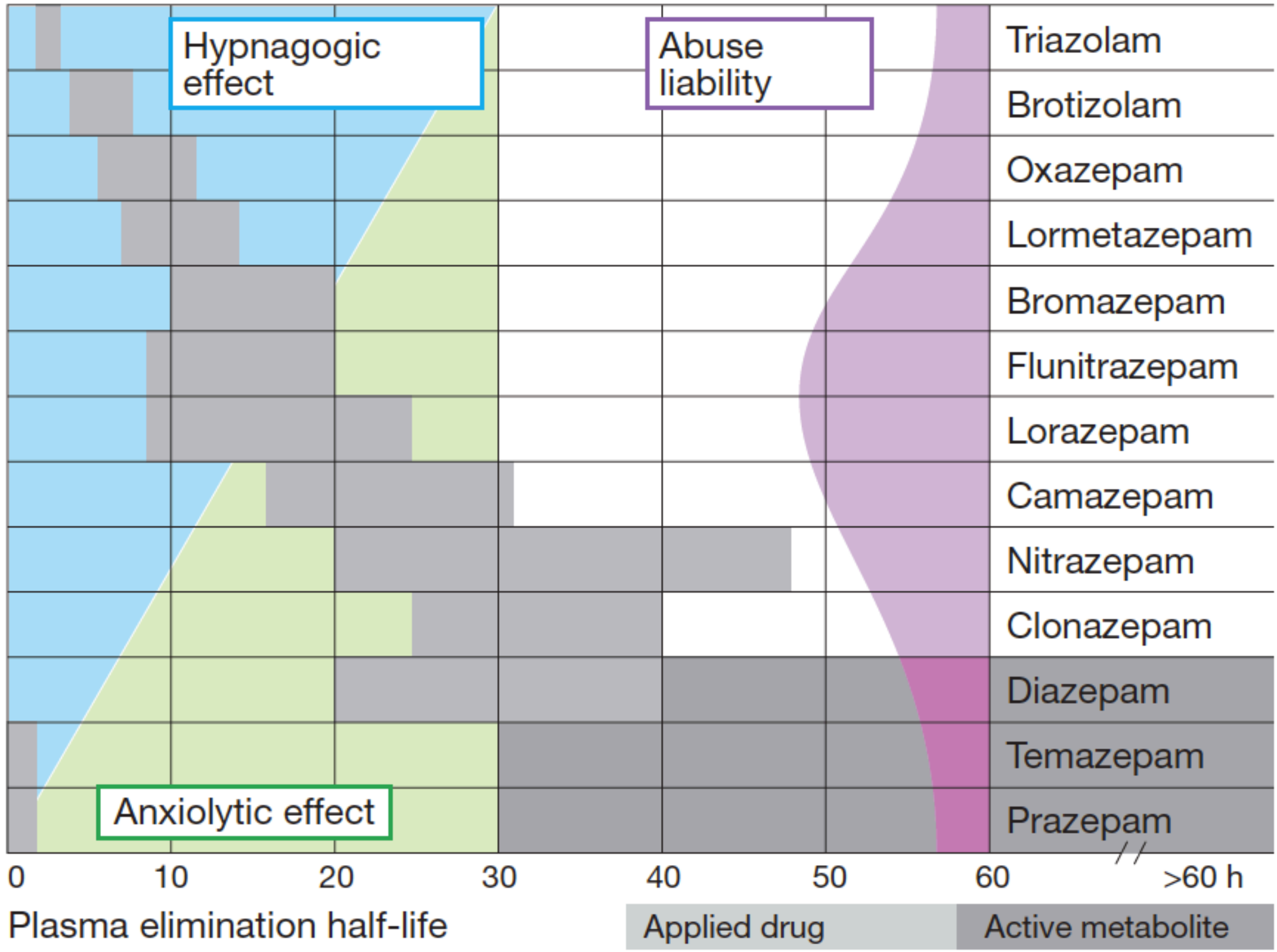


Triazolam




Waking state
Sleep stage I
Sleep stage II
Sleep stage III
Sleep stage IV
REM
REM-sleep= Rapid Eye Movement sleep
NREM = No Rapid Eye Movement sleep


Ratio
REM
NREM
5
10
15
20
25
30
Nights without hypnotic
Nights with hypnotic
Nights after withdrawal of hypnotic


Hypnagogic effect
Abuse liability
Anxiolytic effect
Triazolam
Brotizolam
Oxazepam
Lormetazepam
Bromazepam
Flunitrazepam
Lorazepam
Camazepam
Nitrazepam
Clonazepam
Diazepam
Temazepam
Prazepam
0
10
20
30
40
50
60
>60 h
Plasma elimination half-life
Applied drug
Active metabolite

Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
Khat	0·50	0·3	1·2	0	1·04	1·6	1·2	0·3	0·85	0·7	1·1	0·8

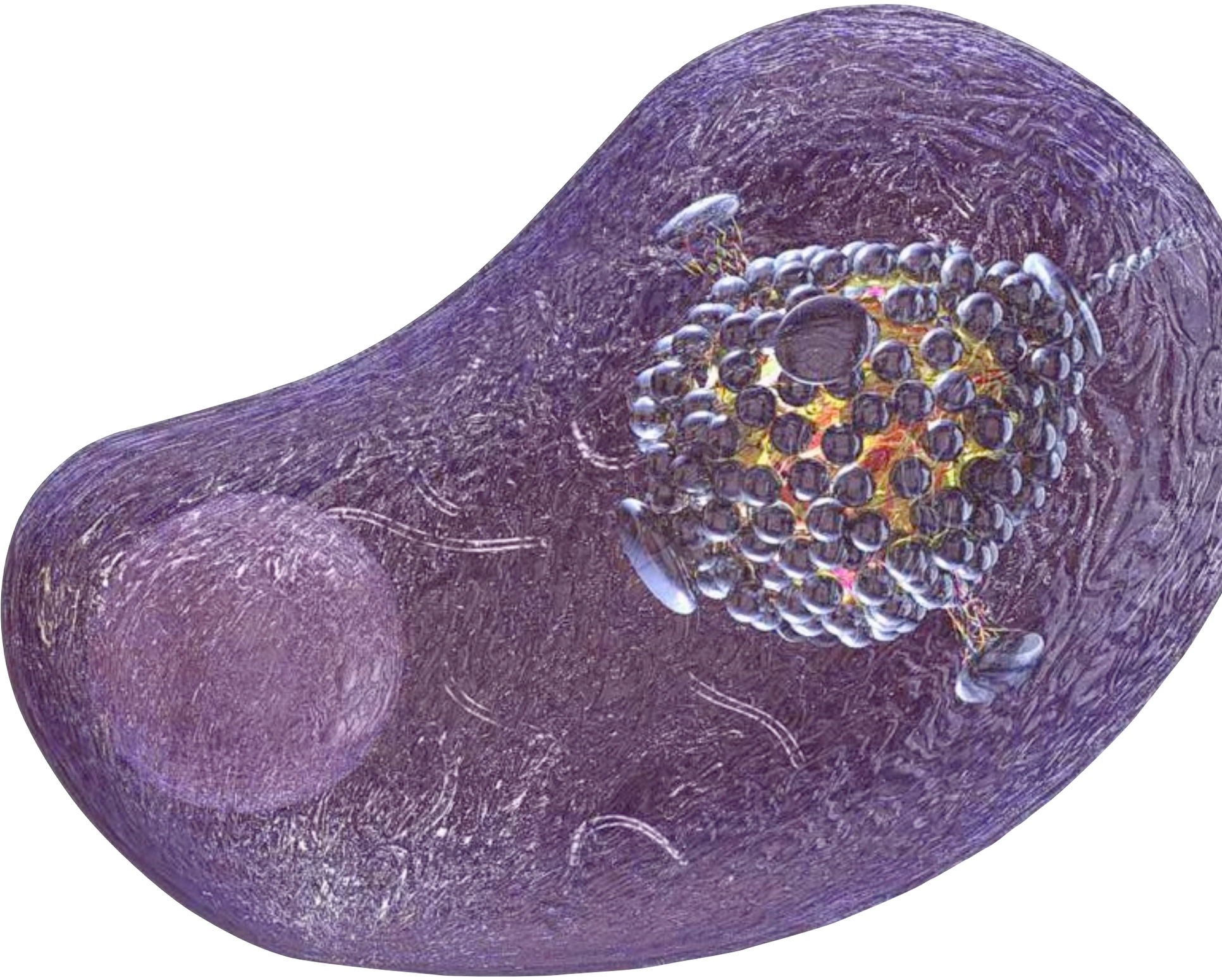
Table 3: Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

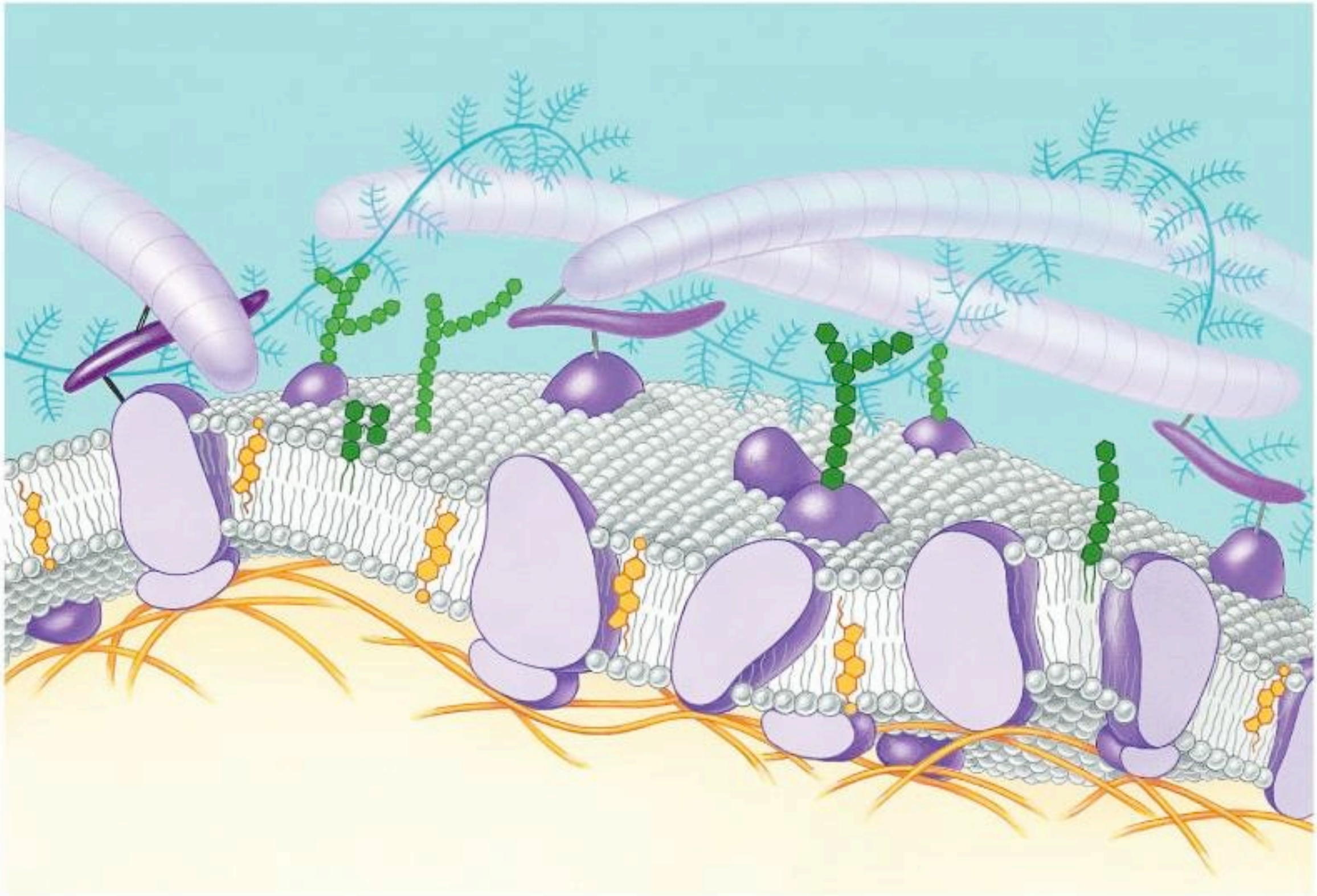
Nutt D, et al. The Lancet. Vol 369 March 24, 2007

SMIRNOFF
SMIRNOFF

ALCOHOL

- Muy hidrosoluble
- Altisima absorción
- Aumenta GABA - Reduce glutamato
- Mecanismo de adicción:
  reducción crónica de GABA y aumento crónico de glutamato... Explicación del *Delirium tremens*
- Tratamiento de alcoholismo
- Mecanismos de tolerancia:
  Natural
  Metabólica
  funcional





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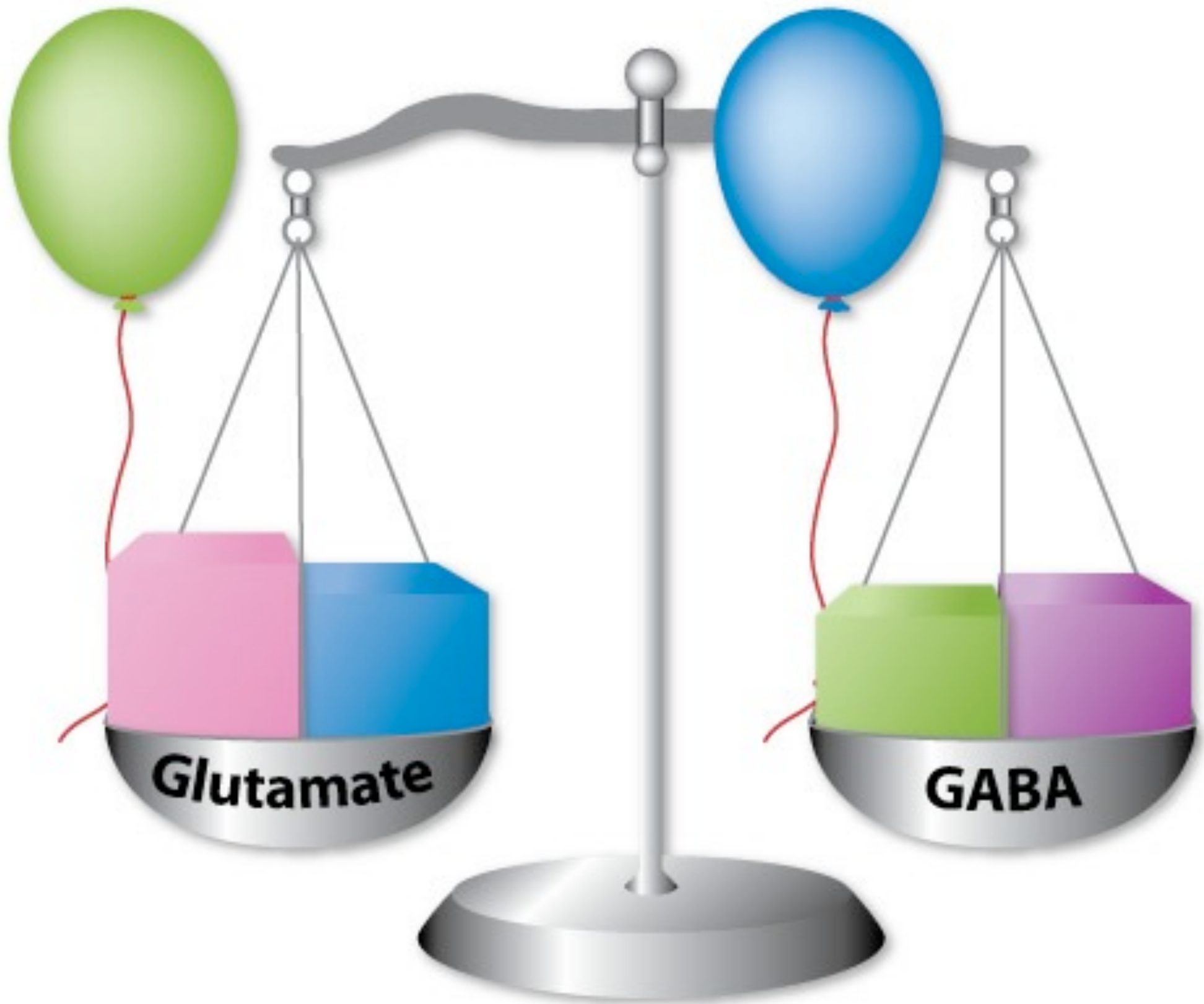

Glutamate
GABA

Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

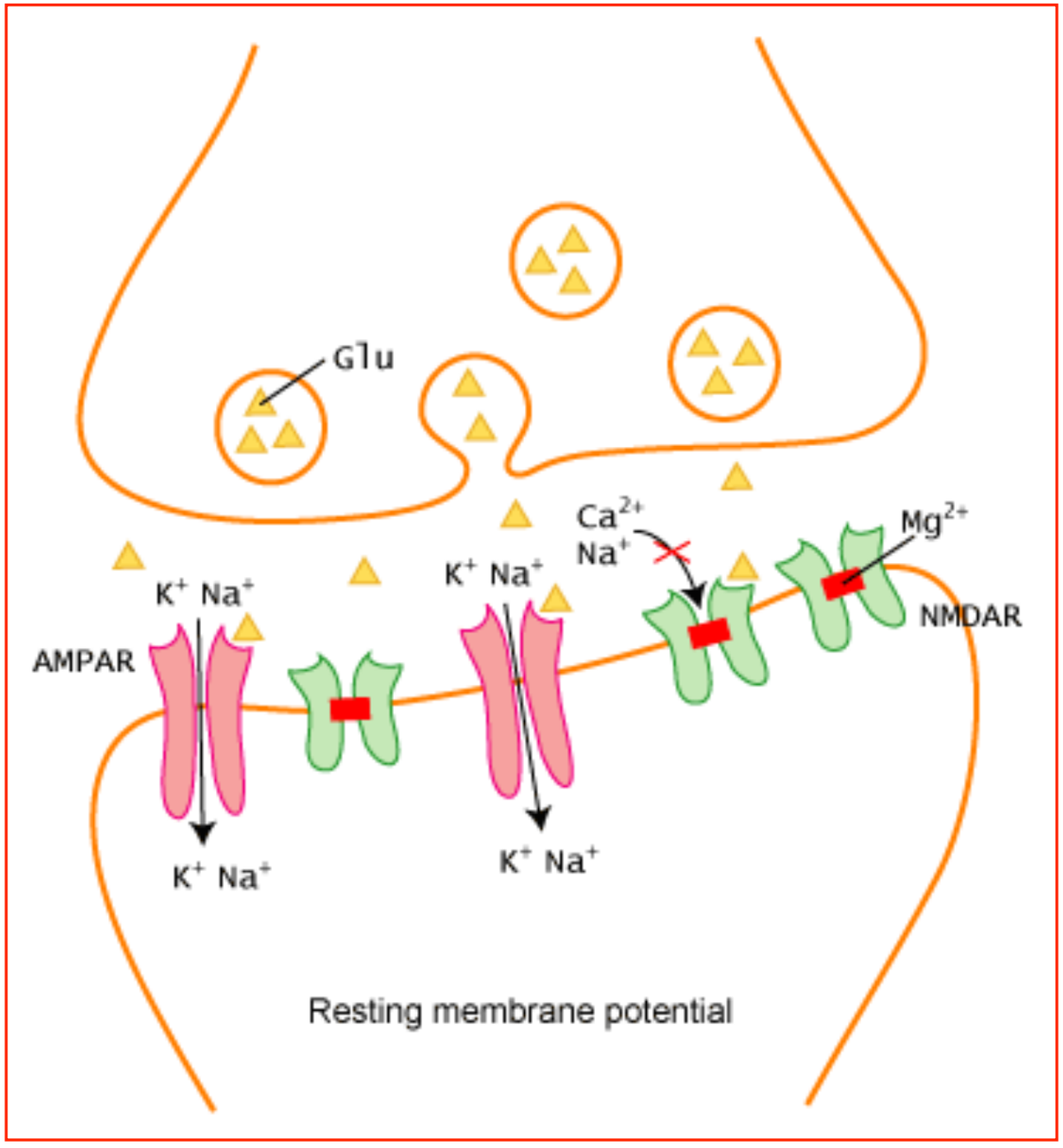
	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
Khat	0·50	0·3	1·2	0	1·04	1·6	1·2	0·3	0·85	0·7	1·1	0·8

Table 3: Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

Nutt D, et al. The Lancet. Vol 369 March 24, 2007

KETAMINA

Mecanismo de acción de la ketamina

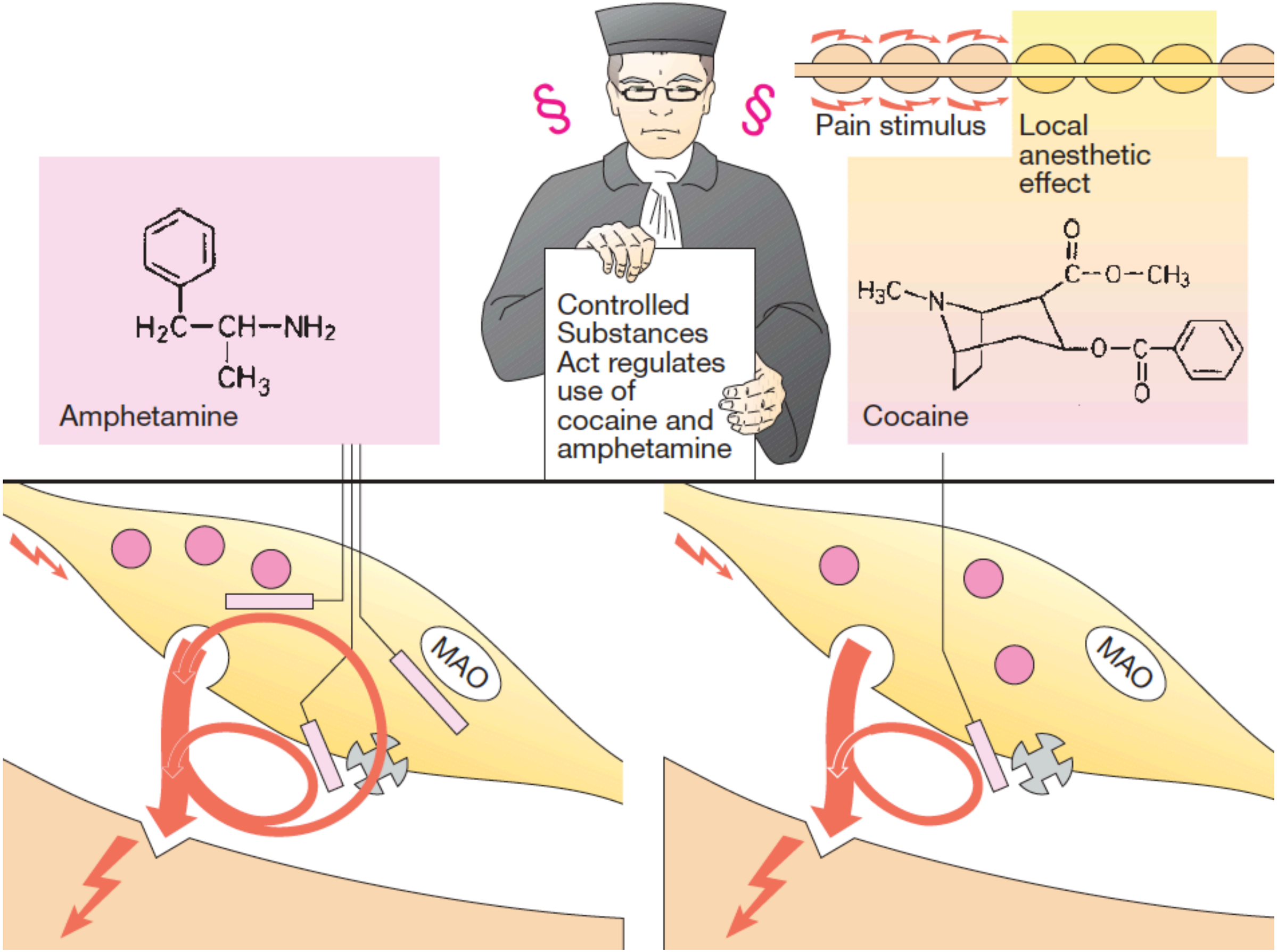


Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
Khat	0·50	0·3	1·2	0	1·04	1·6	1·2	0·3	0·85	0·7	1·1	0·8

Table 3: Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

Nutt D, et al. The Lancet. Vol 369 March 24, 2007


Pain stimulus
Local anesthetic effect
Amphetamine
Controlled Substances Act regulates use of cocaine and amphetamine
Cocaine
MAO
MAO

Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
Khat	0·50	0·3	1·2	0	1·04	1·6	1·2	0·3	0·85	0·7	1·1	0·8

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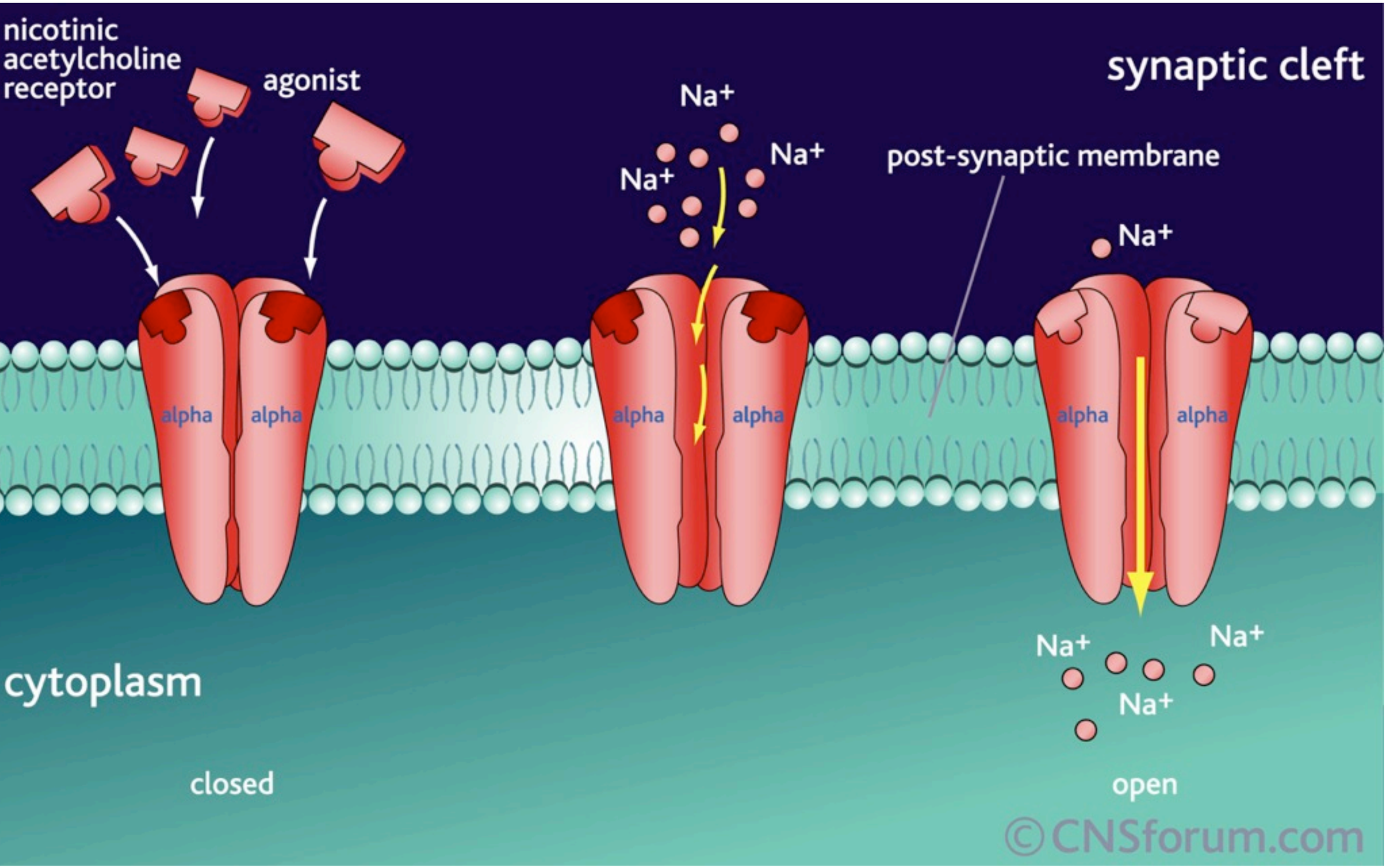
Nutt D, et al. The Lancet. Vol 369 March 24, 2007


nicotinic acetylcholine receptor
agonist
synaptic cleft
Na+
Na+
Na+
post-synaptic membrane
Na+
alpha
alpha
alpha
alpha
alpha
alpha
Na+
Na+
Na+
cytoplasm
closed
open
©CNSforum.com

CHAMPIX
0,5 mg og 1 mg
FILMOVERTRUKNE TABLETTER
Vareniclin
FILMUHÚÐAÐAR TÖFLUR
Vareniclin
TABLETTER, FILMDRASJERT
Vareniklin
11 x 0,5 mg og 14 x 1 mg filmovertrukne tabletter
11 x 0,5 mg og 14 x 1 mg filmuhúðaðar töflur
11 x 0,5 mg og 14 x 1 mg tabletter, filmdrasjert
Pfizer
Må ikke anvendes, hvis forseglingen er brudt/
Notið ekki ef umbúðir hafa verið opnaðar/
Må ikke brukes hvis pakningen har vært åpnet
Pfizer

Campañas antitabaco

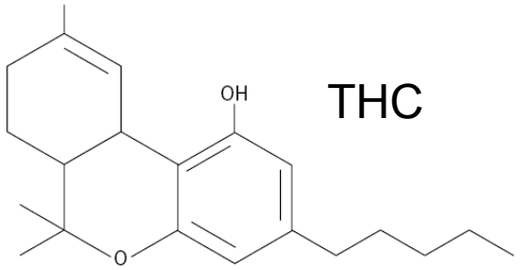
Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
Khat	0·50	0·3	1·2	0	1·04	1·6	1·2	0·3	0·85	0·7	1·1	0·8

Table 3: Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

Nutt D, et al. The Lancet. Vol 369 March 24, 2007

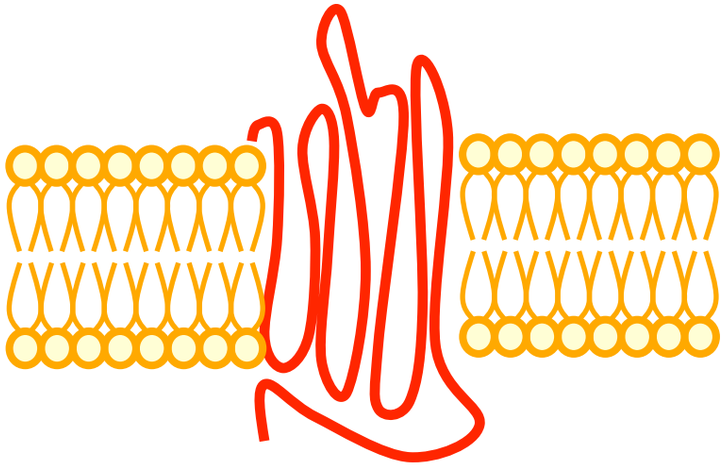
Marihuana



THC

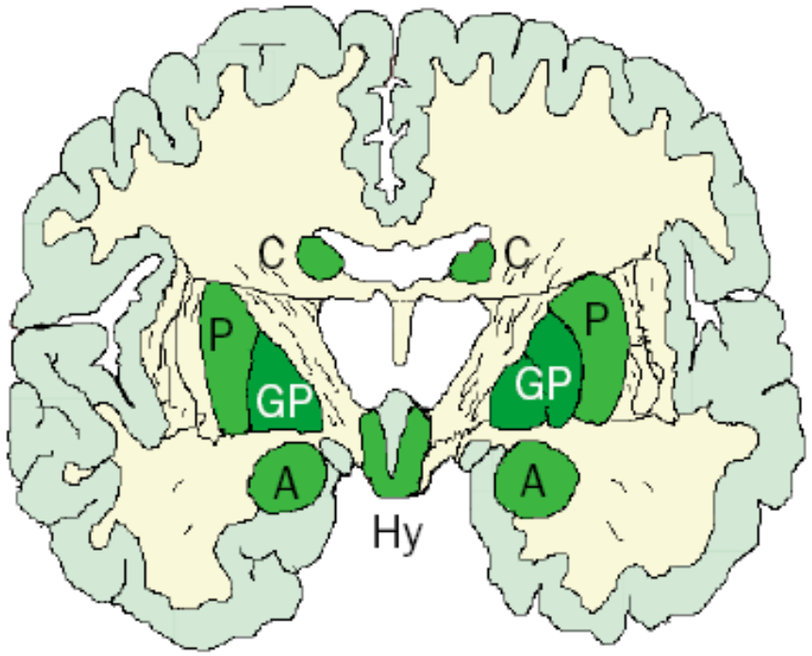
Canabinoides

+

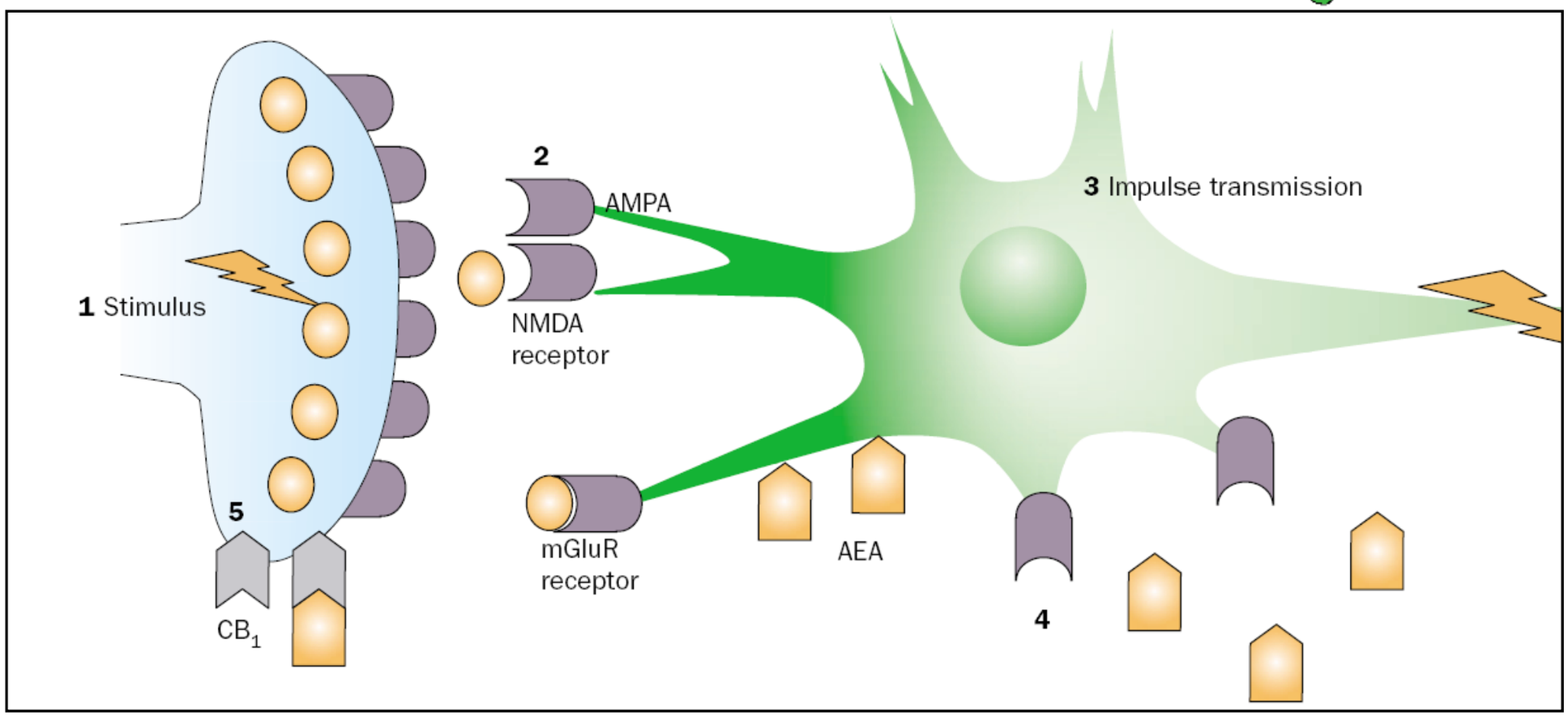


Receptor de anandamida

Marihuana


C
C
P
P
GP
GP
A
A
Hy

C
P
GP
SN
H
A
Cer


1 Stimulus
2
AMPA
NMDA
receptor
3 Impulse transmission
4
5
CB1
mGluR
receptor
AEA

Potenciales Usos de la Marihuana

- Analgésico
- Espasmolitico
- Enfermedades neurodegenerativas
- Accidente cerebrovascular

Mean independent group scores in each of the three categories of harm, for 20 substances, ranked by their overall score, and mean scores for each of the three subscales

	Physical harm				Dependence				Social harm			
	Mean	Acute	Chronic	Intravenous	Mean	Pleasure	Psychological dependence	Physical dependence	Mean	Intoxication	Social harm	Health-care costs
Heroin	2·78	2·8	2·5	3·0	3·00	3·0	3·0	3·0	2·54	1·6	3·0	3·0
Cocaine	2·33	2·0	2·0	3·0	2·39	3·0	2·8	1·3	2·17	1·8	2·5	2·3
Barbiturates	2·23	2·3	1·9	2·5	2·01	2·0	2·2	1·8	2·00	2·4	1·9	1·7
Street methadone	1·86	2·5	1·7	1·4	2·08	1·8	2·3	2·3	1·87	1·6	1·9	2·0
Alcohol	1·40	1·9	2·4	NA	1·93	2·3	1·9	1·6	2·21	2·2	2·4	2·1
Ketamine	2·00	2·1	1·7	2·1	1·54	1·9	1·7	1·0	1·69	2·0	1·5	1·5
Benzodiazepines	1·63	1·5	1·7	1·8	1·83	1·7	2·1	1·8	1·65	2·0	1·5	1·5
Amphetamine	1·81	1·3	1·8	2·4	1·67	2·0	1·9	1·1	1·50	1·4	1·5	1·6
Tobacco	1·24	0·9	2·9	0	2·21	2·3	2·6	1·8	1·42	0·8	1·1	2·4
Buprenorphine	1·60	1·2	1·3	2·3	1·64	2·0	1·5	1·5	1·49	1·6	1·5	1·4
Cannabis	0·99	0·9	2·1	0	1·51	1·9	1·7	0·8	1·50	1·7	1·3	1·5
Solvents	1·28	2·1	1·7	0	1·01	1·7	1·2	0·1	1·52	1·9	1·5	1·2
4-MTA	1·44	2·2	2·1	0	1·30	1·0	1·7	0·8	1·06	1·2	1·0	1·0
LSD	1·13	1·7	1·4	0·3	1·23	2·2	1·1	0·3	1·32	1·6	1·3	1·1
Methylphenidate	1·32	1·2	1·3	1·6	1·25	1·4	1·3	1·0	0·97	1·1	0·8	1·1
Anabolic steroids	1·45	0·8	2·0	1·7	0·88	1·1	0·8	0·8	1·13	1·3	0·8	1·3
GHB	0·86	1·4	1·2	0	1·19	1·4	1·1	1·1	1·30	1·4	1·3	1·2
Ecstasy	1·05	1·6	1·6	0	1·13	1·5	1·2	0·7	1·09	1·2	1·0	1·1
Alkyl nitrites	0·93	1·6	0·9	0·3	0·87	1·6	0·7	0·3	0·97	0·8	0·7	1·4
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