

# Purity, adulteration and price of drugs bought on-line versus off-line in the Netherlands

Author(s)

van der Gouwe, D; Brunt, TM; van Laar, M; van der Pol, P

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## **Abstract**

**Background and aims:** On-line drug markets flourish and consumers have high expectations of on-line quality and drug value. The aim of this study was to (i) describe on-line drug purchases and (ii) compare on-line with off-line purchased drugs regarding purity, adulteration and price.

**Design:** Comparison of laboratory analyses of 32 663 drug consumer samples (stimulants and hallucinogens) purchased between January 2013 and January 2016, 928 of which were bought on-line.

**Setting:** The Netherlands.

**Measurements:** Primary outcome measures were (i) the percentage of samples purchased on-line and (ii) the chemical purity of powders (or dosage per tablet); adulteration; and the price per gram, blotter or tablet of drugs bought on-line compared with drugs bought off-line.

**Findings:** The proportion of drug samples purchased on-line increased from 1.4% in 2013 to 4.1% in 2015. The frequency varied widely, from a maximum of 6% for controlled, traditional substances [ecstasy tablets, 3,4-methylenedioxy-methamphetamine (MDMA) powder, amphetamine powder, cocaine powder, 4-bromo-2,5-dimethoxyphenethylamine (2C-B) and lysergic acid diethylamide (LSD)]

to more than a third for new psychoactive substances (NPS) [4-fluoroamphetamine (4-FA), 5/6-(2-aminopropyl)benzofuran (5/6-APB) and methoxetamine (MXE)]. There were no large differences in drug purity, yet small but statistically significant differences were found for 4-FA (on-line 59% versus off-line 52% purity for 4-FA on average,  $P = 0.001$ ), MDMA powders (45 versus 61% purity for MDMA,  $P = 0.02$ ), 2C-B tablets (21 versus 10 mg 2C-B/tablet dosage,  $P = 0.49$ ) and ecstasy tablets (131 versus 121 mg MDMA/tablet dosage,  $P = 0.05$ ). The proportion of adulterated samples purchased on-line and off-line did not differ, except for 4-FA powder, being less adulterated on-line ( $\chi^2 = 8.3$ ;  $P < 0.02$ ). Drug prices were mainly higher on-line, ranging for various drugs from 10 to 23% higher than that of drugs purchased off-line (six of 10 substances:  $P < 0.05$ ).

Conclusions: Dutch drug users increasingly purchase drugs on-line: new psychoactive substances in particular. Purity and adulteration do not vary considerably between drugs purchased on-line and off-line for most substances, while on-line prices are mostly higher than off-line prices.

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