

More Data About the New Psychoactive Drug 2C-B

To the Editor:

Giroud et al. (1) recently described the discovery of 2C-B (4-bromo-2,5-dimethoxyphenethylamine, Figure 1 [I_A]) as a new psychoactive phenethylamine in Ecstasy tablets sold on the Swiss black market. Here we would like to report the circumstances of the Dutch market that partly confirm the situation in Switzerland.

Unfortunately, the marketing of new phenylalkylamine psychotropics is common practice in the Netherlands. The reason is that as long as the name of a drug is not specified in the Dutch Opium Act, the selling and abuse of new phenylalkylamine drugs is difficult to prevent by the Dutch authorities. As this Drug Act only contains a limited number of names of phenalkylamine psychotropics, the marketing possibilities of new drugs are apparently unrestricted.

Until recently, the hallucinogenic 2,5-dimethoxyphenalkylamines were not popular in the Netherlands. For example, the amphetamine analogue of 2C-B, 4-bromo-2,5-dimethoxyphenisopropylamine (DOB, Figure 1 [I_B]), which appeared on the Dutch market in the beginning of 1994 in limited quantities, was seen only rarely after its first appearance (2). Because of the very potent hallucinogenic effects of DOB (3), the interest in this type of drug was probably limited to a small group of users. In addition, acute warning campaigns are believed to have prevented widespread DOB abuse. It is important to note that DOB was already specified in the Dutch Opium Act at the time of its introduction.

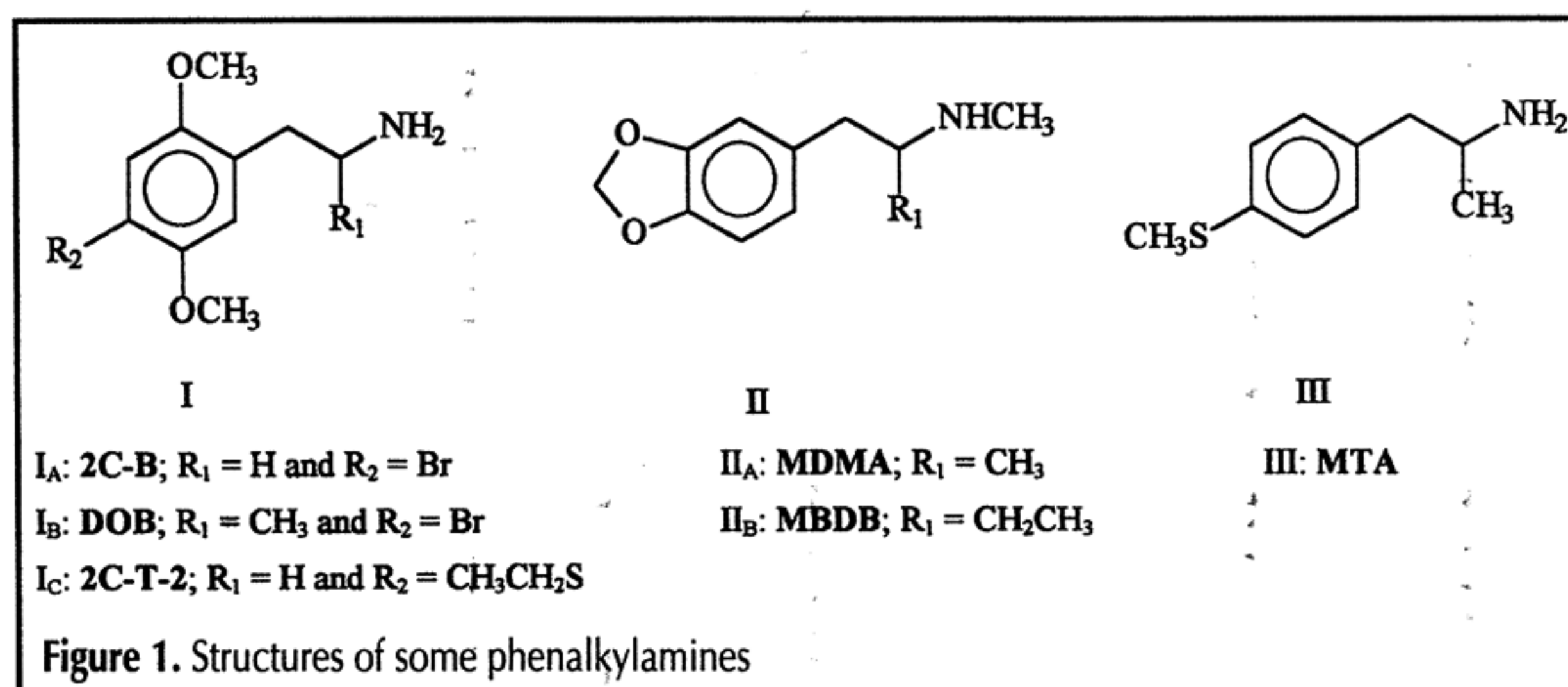
The popularity of hallucinogenic 2,5-dimethoxyphenalkylamines on the Dutch market changed with the introduction of 2C-B in 1995. Because 2C-B was not listed by name in the Dutch Opium Act at that time, nothing prevented its sale and abuse. 2C-B tablets were in fact marketed by a commercial firm and were available in so-called "smart-drug" shops (4,5). Because of these circumstances, the abuse of 2C-B apparently became quite popular in a relatively short period. Only after 2C-B was scheduled on the list of illegal drugs in the summer of 1997 did this situation change. Now, pure 2C-B tablets are very difficult to obtain. In the Netherlands, 2C-B is probably only available as an ingredient in Ecstasy tablets.

In some Dutch street samples, we identified 2C-B using a gas chromatography-mass spectrometry (GC-MS) procedure and comparison with a reference substance. The synthesis of this reference compound was performed according to Shulgin and Shulgin (6). The endproduct was characterized by MS and by proton and carbon-13 nuclear magnetic resonance spectrometry. Prior to analysis, the residues of the street samples were derivatized with 100 μ L of a mixture of trifluoroacetic anhydride and ethyl acetate (1:1; v/v, 20 min at 60°C) in order to obtain the respective *N*-trifluoroacetyl derivatives. In contrast to Giroud et al. (1), we were able to search for synthesis impurities. Qualitative and semiquantitative results are summarized in Table I.

Table I. Qualitative and Semi-Quantitative Data of Some Dutch Street Samples Containing 2C-B

Sample code	Contents of sample*	
	2C-B (mg)	other compounds [†]
<i>2C-B Sample</i>		
A	14	<i>N</i> -acetyl-4-bromo-2,5-dimethoxyphenethylamine impurities with isotopic bromine pattern not identified (1.3%)
<i>Ecstasy sample</i>		
B	6	impurities with isotopic bromine pattern not identified (2.1%)
C	5	MBDM; <i>N</i> -methyl-1-(1,3-benzodioxol-5-yl)-2-butamine (970%) no impurities with isotopic bromine pattern detected

* Auxiliary compounds are not accounted for.
[†] The contents of the "other compounds" are expressed as their response signal in the GC-MS chromatogram relative to the response signal of 2C-B; the signal of 2C-B was set at 100%.



Our data confirm the Swiss situation (1). The amount of 2C-B found in Ecstasy tablets is in the range of required dosages, 5–10 mg for stimulating effects and 10–20 mg for hallucinogenic effects. Although the visual appearances of the respective tablets were not the same (specific data not shown here), the individual compositions were very similar. The Dutch (Table I) and the Swiss (1) Ecstasy tablets contained amounts of 2C-B that normally result in stimulating effects (tablets B and C). As in the Swiss situation, one of the tablets (tablet C) contained *N*-methyl-1-(1,3-benzodioxol-5-yl)-2-butamine (MBDB; Figure 1 [II_B]). Some optimal and specific effects of 2C-B are obtained in combination with for example 3,4-methylenedioxymethamphetamine (MDMA, Figure 1 [II_A]) (7). Because of its more or less similar action to MDMA, the finding of MBDB in combination with 2C-B in an Ecstasy tablet should perhaps not be a surprise. The tablet that was marketed as a 2C-B tablet (tablet A) contained considerably higher amounts of 2C-B and therefore had the quantity required to induce hallucinogenic effects.

Some impurities were found in the tablets, but these were detected in small percentages (Table I). Only one of the impurities could be identified, the *N*-acetyl derivative of 2C-B. The presence of this impurity indicates that the synthesis route of tablet A (Table I) involved the bromination of 1-(2,5-dimethoxyphenyl)-2-ethamine in glacial acetic acid (6).

Although 2C-B has been considered as a potential drug of abuse for years (8), intoxications have not yet been reported. The data in the Dutch and in the Swiss situations show that amounts of 2C-B in Ecstasy tablets are relatively low, which may explain the absence of reported intoxications. However, the fact that no intoxications have been identified could also be due to screening methods such as the common amphetaminelike immunoassays. These assays lack cross-reactivity for 2C-B (9–11).

Perhaps the psychotropic effects, rather than the potentially toxic effects, should be of more concern. Compared with MDMA, for example, 2C-B is effective at much lower dosages. Moreover, as its effects are dose-dependant and Ecstasy tablets contain unknown quantities, adverse reactions may be experienced. The potential influence on driving performance after a “dance rave”, “techno”, or “acid-house” party should also be considered.

The inclusion of the name of 2C-B in the Dutch Opium Act prevented further popularity in the Netherlands. However, new phenalkylamine drugs such as para-methylthioamphetamine (MTA; Figure 1 [III]) and 4-ethylthio-2,5-dimethoxyphenethylamine (2C-T-2; Figure 1 [I_C]) were recently introduced on the Dutch market (12). This dilemma illustrates that just including a name in a Drug Act is not sufficient and merely emphasizes the limitation of a Drug Act based on specifically listed names.

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