Emerging Designer Drug Monograph

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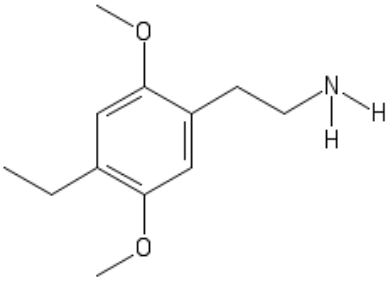
Drug Name: **2C-E**

Synonyms: 4-ethyl-2,5-dimethoxy-N-(2-methoxybenzyl) phenethylamine, Europa

Structure:



Formula: $C_{12}H_{19}NO_2$

Molecular Weight: 209.3

Pharmacological Drug Class: 2C-E is a monoamine oxidase inhibitor, which blocks the breakdown of norepinephrine and serotonin (www.caymanchemical.com). Hallucinogenic effects are a result of a strong efficacy for 5-HT_{2C} receptors (1).

Metabolism: GC-MS analysis of 2C-E rat urine samples suggested three metabolic pathways. In the first pathway the parent compound undergoes O-dealklyation at position 2 and 5, followed by N-acetylation and hydroxylation of C2, deamination with oxidation to the corresponding acid, or reduction to the corresponding alcohol. A second pathway involves N-acetylation of the parent, hydroxylation at C1 of the ethyl side chain and dealkylation and oxidation of the corresponding ketone, followed by beta-dehydroxylation. A third pathway is the hydroxylation of the parent compound at C2 of the ethyl side chain, and then the N-acetylation and oxidation of the hydroxyl to the corresponding acid (2).

Blood Concentrations: No blood concentrations for 2C-E have been reported in peer-reviewed literature.

Effects and Toxicity: 2C-E can be taken orally or insullflated. Lower doses result in stimulant effects, while higher doses result in hallucinogenic effects (1). User accounts describe effects including mental and physical stimulation, increased awareness, tachycardia, muscle tension, sweating, dizziness, nausea and vomiting, and paranoia (3, 4).

Analysis: 2C-E is a basic compound that chromatographs will through GC-MS and LC-MS. SWGDRUG outlines parameters for GC-MS analysis.

References:

1. Van Vrancken, M. J., Benavides, R., Wians, F. H. Jr. (2013) Identification of designer drug 2C-E (4-ethyl-2, 5-dimethoxy-phenethylamine) in urine following a drug overdose. *Proc (Baylor University Medical Center)*, 26(1), 58 - 61. http://www.ncbi.nlm.nih.gov/pubmed/23382618

2. Meyer, M. R., Maurer, H. H. (2010) Metabolism of designer drugs of abuse: an updated review. *Current Drug Metabolism*, 11(5), 468 - 482. http://www.ncbi.nlm.nih.gov/pubmed/20540700

3. Sacks J., Ray, M. J., Williams, S., Opatowsky, M. J. (2012) Fatal toxic leukoencephalopathy secondary to overdose of a new psychoactive designer drug 2C-E ("Europa"). *Proc (Baylor University Medical Center)*, 25(4), 374 - 376. http://www.ncbi.nlm.nih.gov/pubmed/23077393

4. Sanders, B., Lankenau, S. E., Bloom, J. J., Hathazi, D. (2008) "Research chemicals": tryptamine and phenethylamine use among high-risk youth. *Substance Use Misuse*, 43(3-4), 389 - 402. http://www.ncbi.nlm.nih.gov/pubmed/18365939

Cayman Chemical
https://www.caymanchem.com/pdfs/10395.pdf

SWGDRUG Monograph
http://www.swgdrug.org/Monographs/2C-E.pdf

Forendex
http://forendex.southernforensic.org/index.php/detail/index/1247

2C-E Effects Erowid
http://www.erowid.org/chemicals/2ce/2ce.shtml