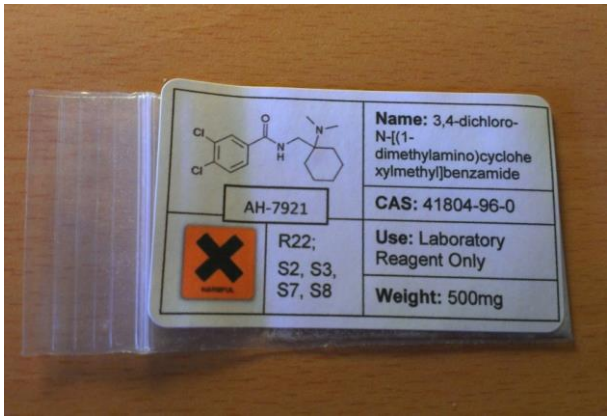
Spotlight on AH-7921



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New Psychoactive Substances Seminar,

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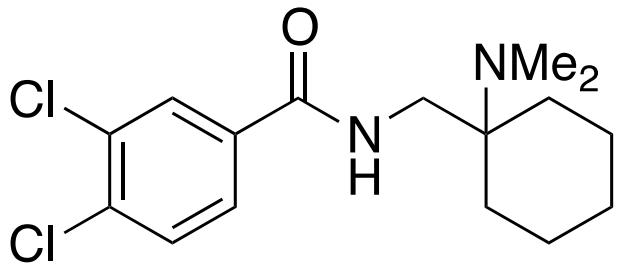
AH-7921



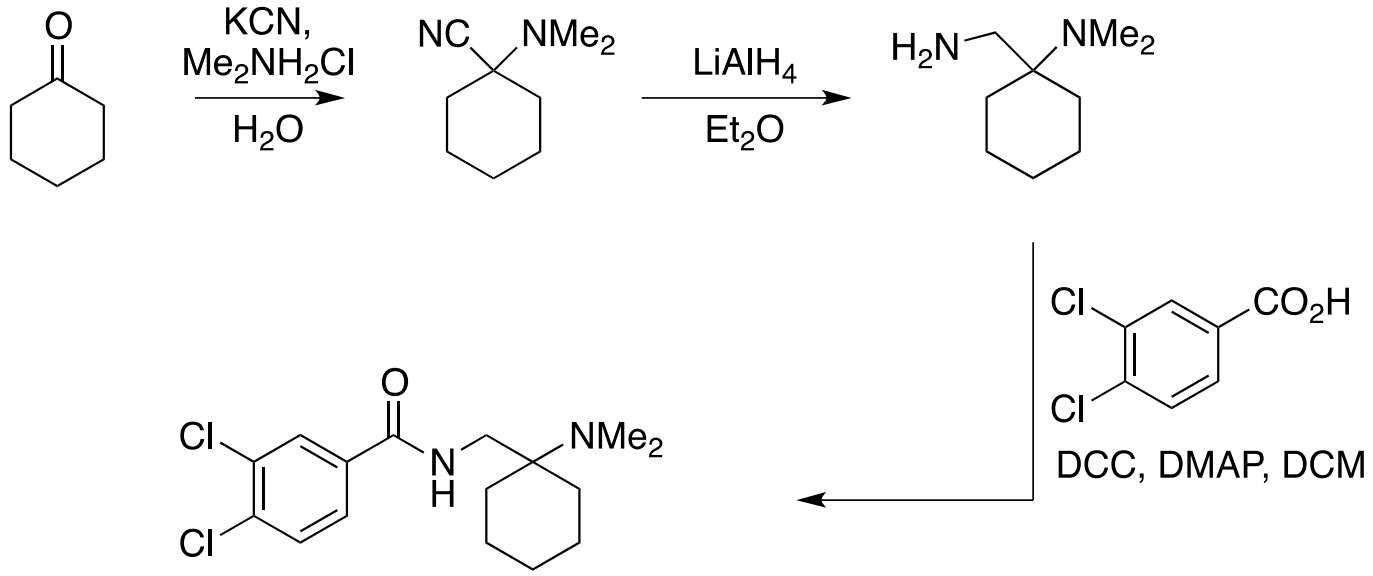
CAS numbers:

- Free base 55154-30-8
- Hydrochloride salt 41804-96-0

- Opioid analglesic drug, selective for the μ-opioid receptor.
- Reportedly has roughly 80% the potency of morphine.
- Patented in 1976 by Allen & Hanburys.
- Also known by the street name “doxylan”.
- Unlike morphine, the chemical synthesis of AH-7921 is short and straightforward.

Chemical Synthesis

- Short and straightforward (3 steps):



- Shortest synthesis of morphine takes 14 steps and requires specialist equipment.

Prevalence

- A report, published in January 2014, indicates the detection of AH-7921 in seven EU member states and Norway.

- Seizures were made in six EU member states and in Norway in 2012 and 2013.

- Quantities seized ranged from 20 mg by Swedish police, to 500 g by French customs authorities.

- Typically, seized material consisted of white to off-white powder.

- In Norway, 230 mg of a white powder and a used syringe, both containing AH-7921, were recovered from the scene of a death.

Risks

- Up to January 2014, A total of six non-fatal intoxications and 15 deaths associated with AH-7921 were reported in Sweden, the UK and Norway.

- All six non-fatal intoxications were reported, and analytically confirmed, in Sweden between 2012-2013.

Deaths

- Ten deaths associated with AH-7921 were reported in Sweden in 2013.

- In all cases, AH-7921 was detected in combination with at least one other psychoactive substance such as amphetamines, methamphetamines and benzodiazepines.

- Reported causes of death included: “overdose of AH-7921,” “toxic effects of AH-7921” and “overdose of benzodiazepines and opiates.”

Risks

- Three deaths were reported in the UK associated with AH-7921 in 2013.
- In two of the cases, AH-7921 was detected in combination with other psychoactive substances.
- The third detection was an apparent suicide.
- Two deaths have been reported in Norway associated with AH-7921, the first in December 2012 and the second in August 2013.
- In the first case, a white powder and a used syringe, both containing AH-7921, were found at the scene.
- Phenazepam was also found at the scene, but not detected in the victim's blood.
- In the second case, AH-7921 was detected at a concentration of 1.3 mmol/L, alongside 2-fluoromethamphetamine (0.04 mmol/L), 3-methylmethcathinone (0.01 mmol/L), codeine (1.4 mmol/L) and paracetamol (124 mmol/L).
- There was evidence that the deceased had obtained the drugs *via* the internet.

Pharmacology

- AH-7921 was the most active compound in a series of benzamides bearing an aminocyclohexane moiety, carried out in the early 1970s.
- AH-7921 showed significant analgesic properties, with similar potency to morphine in several pain models.
- The side-effects (pupil dilation, respiratory rate) for AH-7921 and morphine were similar, indicating a similar mode of action at the receptor level (μ-opioid receptor). All effects produced by both drugs were significantly reduced by simultaneous administration of the μ-opioid receptor antagonist naloxone.
- The amounts of AH-7921 capable of causing analgesia and respiratory depression were much more similar than for morphine, increasing the risk of overdose (ED_{50}: analgesia/resp. depression: AH7921 - 0.55/2.5 mg/kg; morphine - 0.45/4.2 mg/kg)
- There is strong evidence of addictive properties associated with AH-7921. A test group of monkeys showed withdrawal symptoms similar to morphine withdrawal, after a similar dosing schedule.

Usage and Availability

- No formal report on the usage of AH-7921 has been published so far.
- Information obtained *via* internet drug-user forums suggests AH-7921 can be taken nasally (powder or vapours), orally or as an intravenous injection.
- It is often used in combination with various other psychoactive substances.
- Regardless of the method of administration, users report similar feelings of euphoria, relaxation and alertness. Nausea, itching and tremors were also documented.

Availability:

- Can be obtained from a number of internet retailers.
- Often labeled as a “research chemical.”
- The first detection reported to the EMCDDA was 250 mg of white powder, sold in the UK for £ 10 (≈€ 12), from an internet retailer selling “research chemicals.”

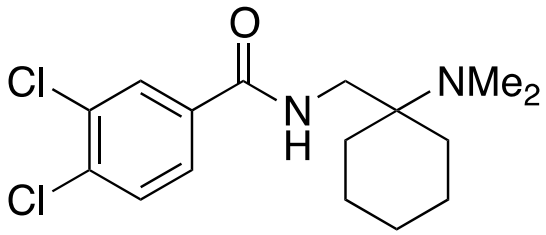
Control Measures

- Sweden is the only European country with full control measures in place for AH-7921.

- Supply is illegal in Poland and Romania. In Finland, the Netherlands and Norway, the substance is treated as a medicine, making a doctor's prescription a requirement for obtaining it legally.

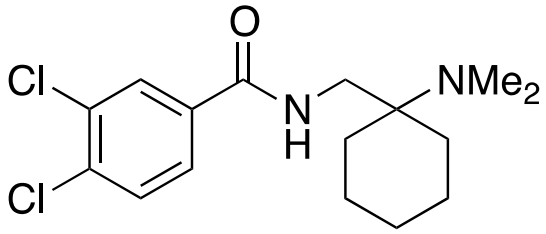
- All other EU member states currently have no control measures in place for AH-7921 at the national level.

Conclusions

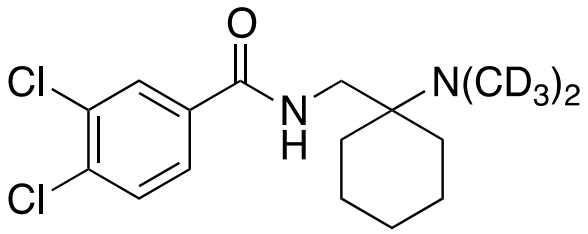


- AH-7921 is a synthetic opioid drug.
- Has been available in The EU since at least July 2012 and has been formally detected in seven member states and Norway.
- Associated with six non-fatal intoxications and fifteen deaths.
- Similarities to the effects of morphine prompt concerns over the further spread of AH-7921 by opioid users.
- Legislative action by member states likely in the near future.

Reference Standards Available



AH-7921



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