November 2026
DEA-SFL1-DOSE-27-003

New Substance Public Alert *N*'-phenethyl-5-chloro *nor*-orphine and *N*'-phenethyl-6-chloro *nor*-orphine

KEY TAKEAWAYS

A new orphine related substance, *N*'-phenethyl-5-chloro *nor*-orphine was identified by DEA through structural elucidation and synthesis of the substance.

This is the first time this compound was identified by DEA, and it has not been previously reported by the National Forensic Laboratory Information System (NFLIS).

There are at least two known isomers which DEA researchers have synthesized; *N*'-phenethyl-5-chloro *nor*-orphine and *N*'-phenethyl-6-chloro *nor*-orphine (chemical information provided below).

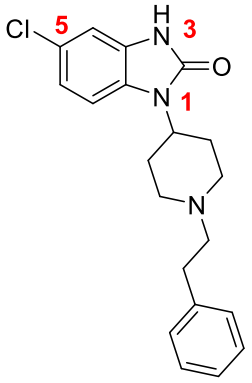
Analytical testing demonstrated that GC retention time or ^{1}H NMR data is useful for distinguishing the two compounds.

BACKGROUND

The unknown substance was submitted in a sample consisting of approximately 7 grams of white powder seized in North Carolina in September 2026. Other substances observed in the sample were methamphetamine, medetomidine, xylazine, cocaine, fentanyl, *ortho*-methylfentanyl, and carfentanil.

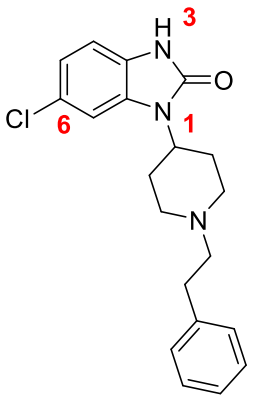
The identified unknown is also being seen in New York, Massachusetts, Connecticut, and Texas.

CHEMICAL INFORMATION



5-chloro-1-(1-phenethylpiperidin-4-yl)-1,3-dihydro-2*H*-benzo[*d*]imidazol-2-one

Figure 1: Structure of *N*'-phenethyl-5-chloro *nor*-orphine.



6-chloro-1-(1-phenethylpiperidin-4-yl)-1,3-dihydro-2*H*-benzo[*d*]imidazol-2-one

Figure 2: Structure of *N*'-phenethyl-6-chloro *nor*-orphine.

Chemical Name: 5-chloro-1-(1-phenethylpiperidin-4-yl)-1,3-dihydro-2*H*-benzo[*d*]imidazol-2-one (*N*'-phenethyl-5-chloro *nor*-orphine)
Molecular Formula: $C_{20}H_{22}ClN_3O$
Molecular Weight: 355.9 Da
Exact Mass: 355.15 u
CAS RN: None
Reference Material: commercially available

Chemical Name: 6-chloro-1-(1-phenethylpiperidin-4-yl)-1,3-dihydro-2*H*-benzo[*d*]imidazol-2-one (*N*'-phenethyl-6-chloro *nor*-orphine)
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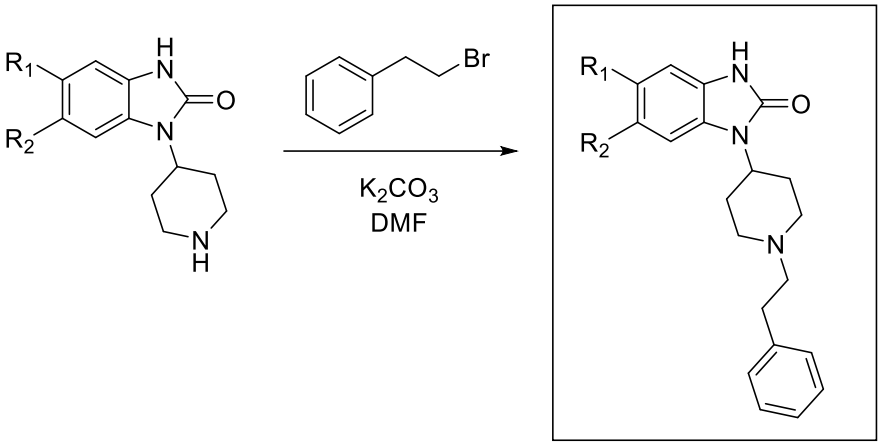


Figure 3: Synthetic pathway for recently detected novel *N*-phenethyl orphine derivatives.

The two isomers synthesized by DEA researchers have the following IUPAC names:

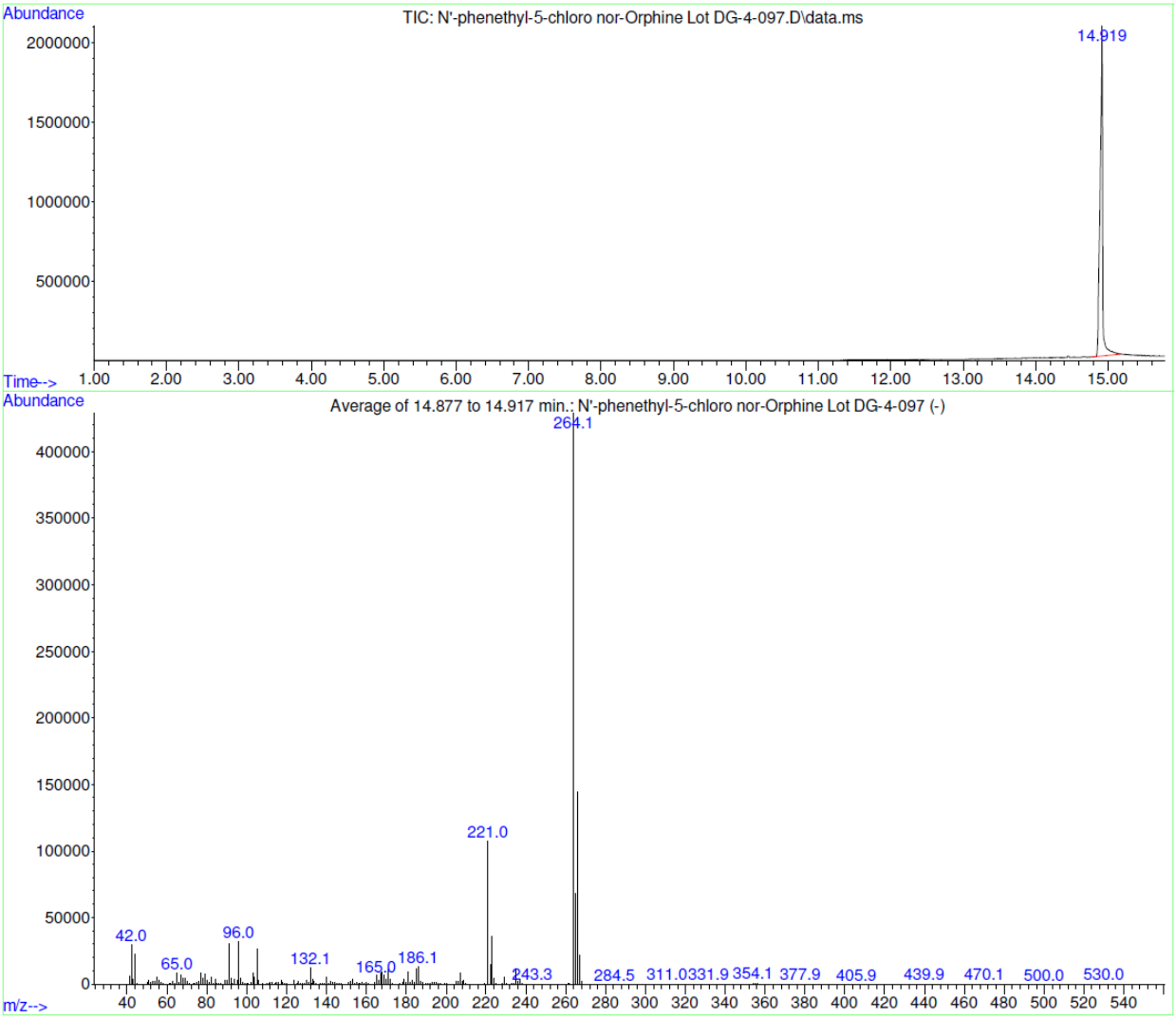
R_1 = Cl, R_2 = H: 5-chloro-1-(1-phenethylpiperidin-4-yl)-1,3-dihydro-2*H*-benzo[*d*]imidazol-2-one (*N*-phenethyl-5-chloro *nor*-orphine); (commercially available)

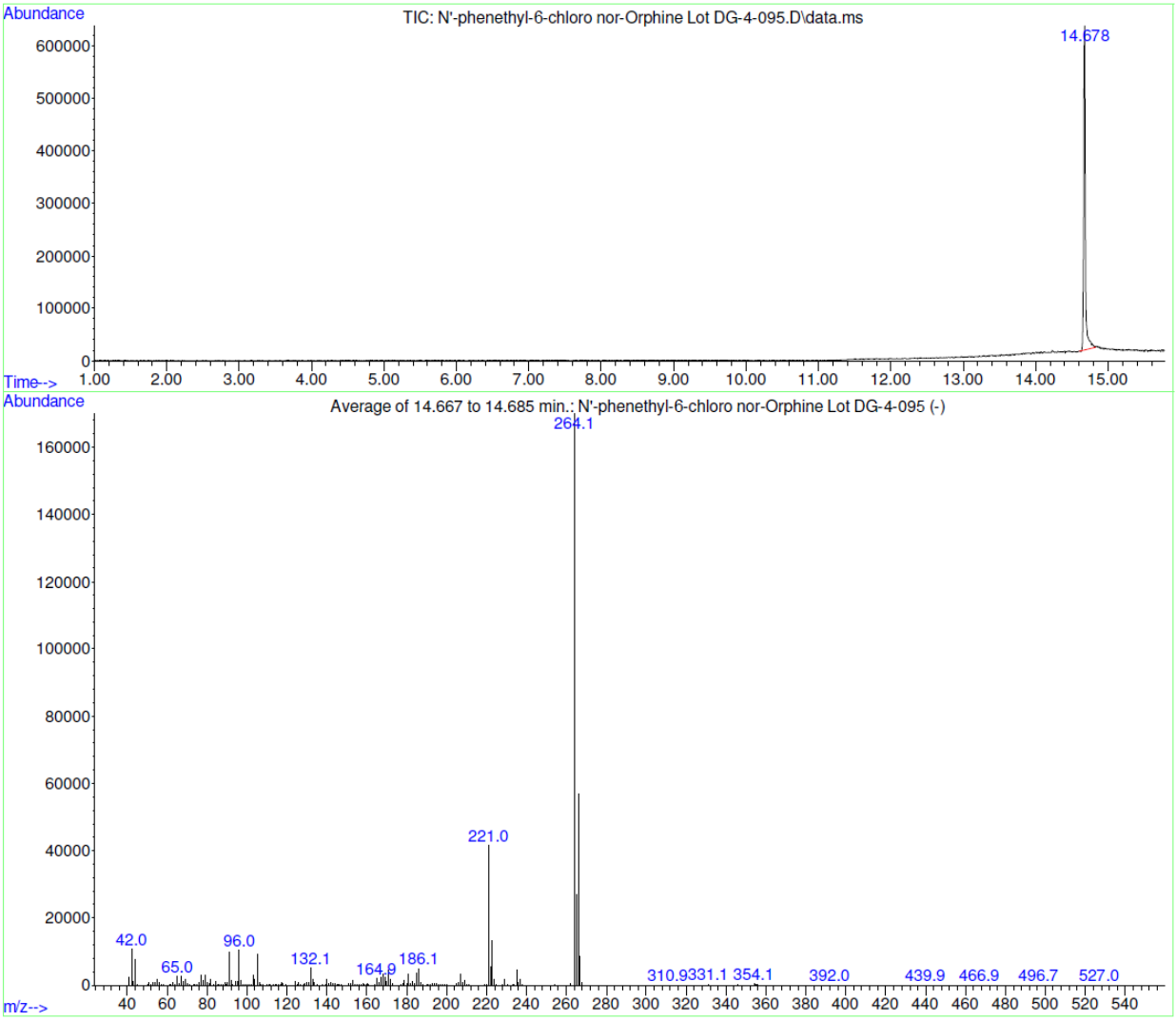
R_1 = H, R_2 = Cl: 6-chloro-1-(1-phenethylpiperidin-4-yl)-1,3-dihydro-2*H*-benzo[*d*]imidazol-2-one (*N*'-phenethyl-6-chloro *nor*-orphine); (not commercially available)

ANALYTICAL DATA

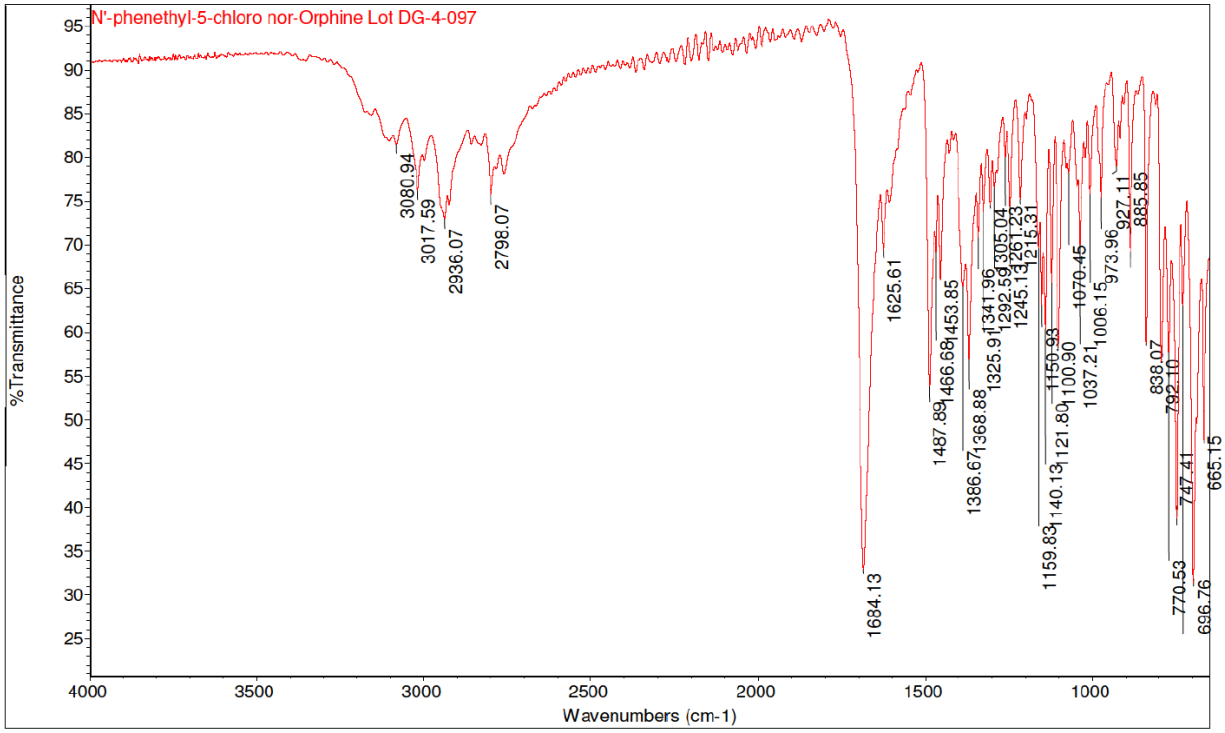
The below analytical data corresponds to isomers *N*'-phenethyl-5-chloro *nor*-orphine and *N*'-phenethyl-6-chloro *nor*-orphine

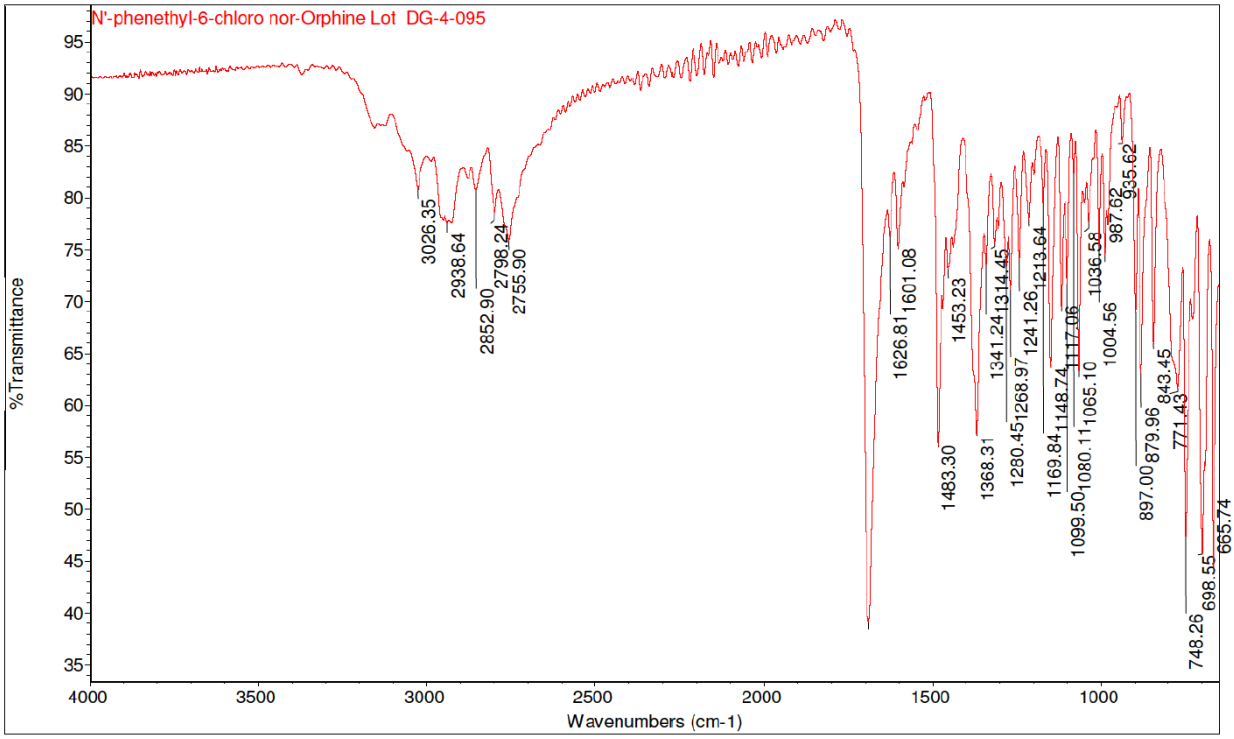
GC-EI-MS data (collected using DEA's GUARDS method – Hydrogen Carrier Gas)



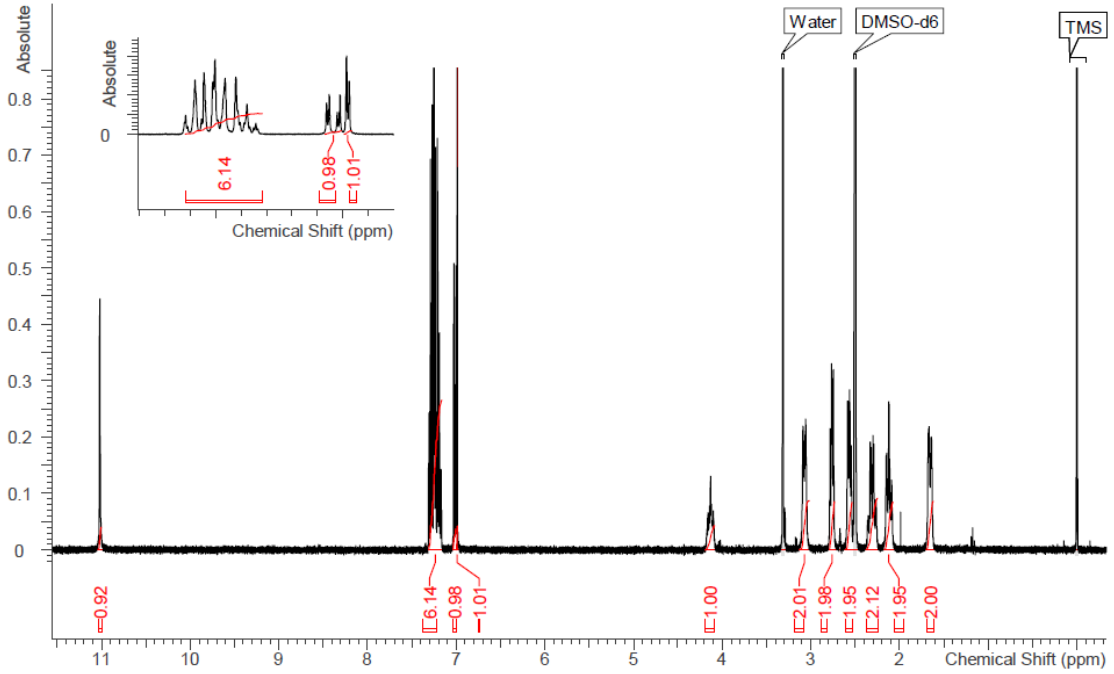

Abundance
TIC: N'-phenethyl-6-chloro nor-Orphine Lot DG-4-095.D\data.ms
14.678
Time-->
Abundance
Average of 14.667 to 14.685 min.: N'-phenethyl-6-chloro nor-Orphine Lot DG-4-095 (-)
264.1
221.0
42.0
96.0
65.0
132.1
164.9
186.1
310.9331.1
354.1
392.0
439.9
466.9
496.7
527.0
m/z-->

FTIR data
(Top: *N'*-phenethyl-5-chloro *nor*-orphine; Bottom: *N'*-phenethyl-6-chloro *nor*-orphine)

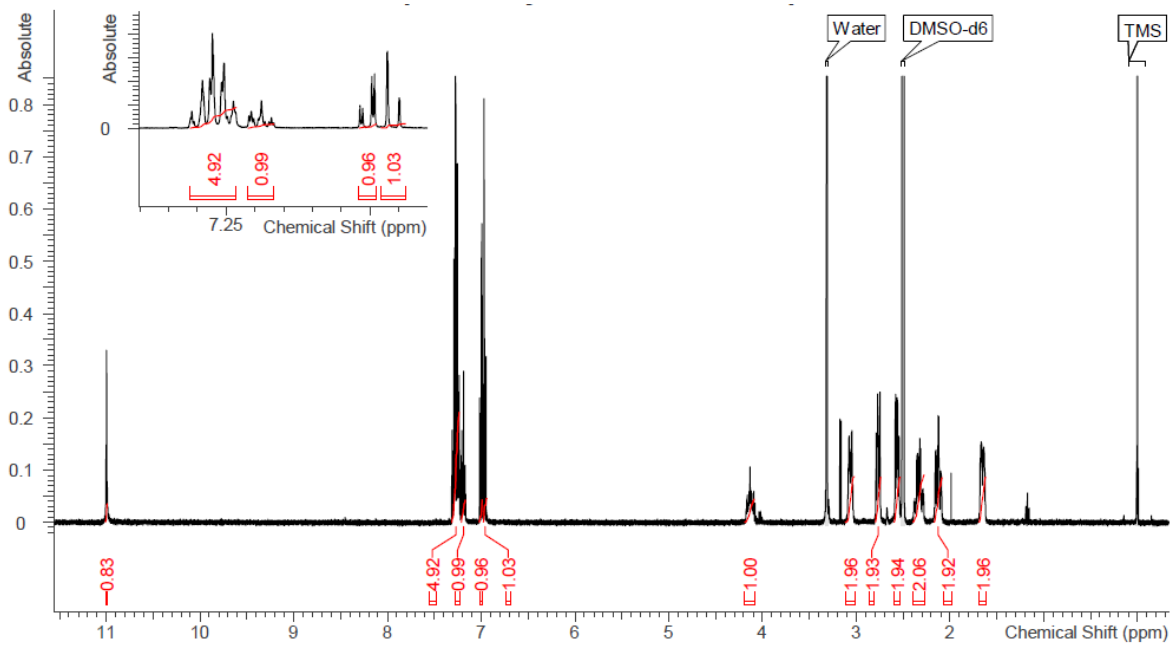




NMR data
(Top: *N'*-phenethyl-5-chloro *nor*-orphine; Bottom: *N'*-phenethyl-6-chloro *nor*-orphine)

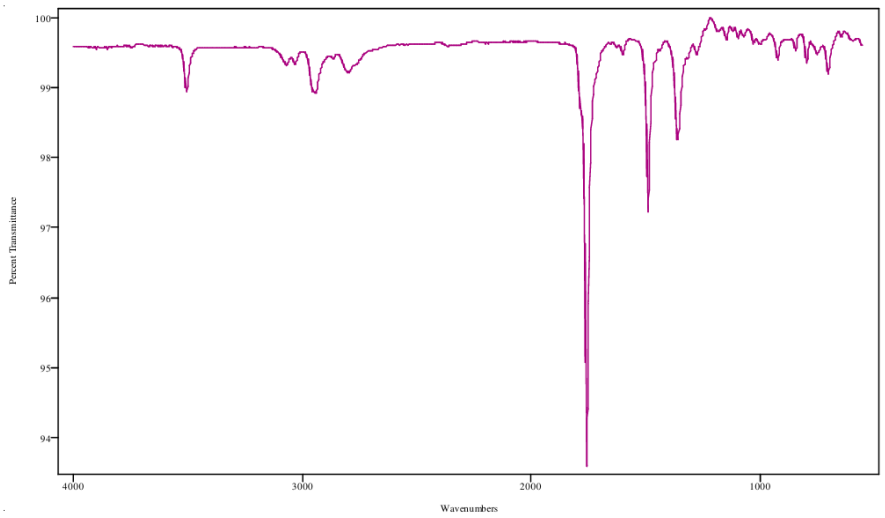


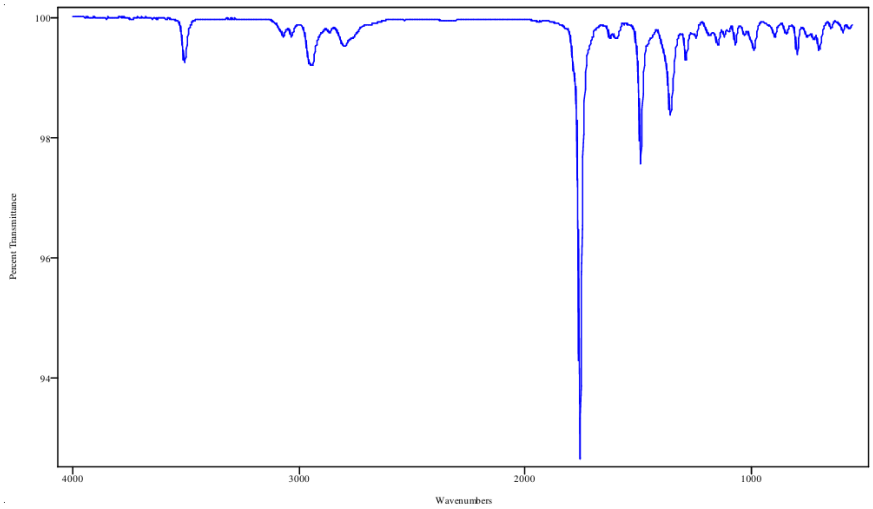
^{1}H NMR (400 MHz, DMSO-d_6) δ ppm 11.02 (s, 1 H) 7.16 - 7.31 (m, 6 H) 7.00 - 7.03 (m, 1 H) 6.99 (d, *J*=2.01 Hz, 1 H) 4.08 - 4.19 (m, 1 H) 3.07 (br d, *J*=11.40 Hz, 2 H) 2.73 - 2.79 (m, 2 H) 2.53 - 2.60 (m, 2 H) 2.31 (qd, *J*=12.21, 3.47 Hz, 2 H) 2.12 (br t, *J*=11.80 Hz, 2 H) 1.66 (br d, *J*=11.90 Hz, 2 H)

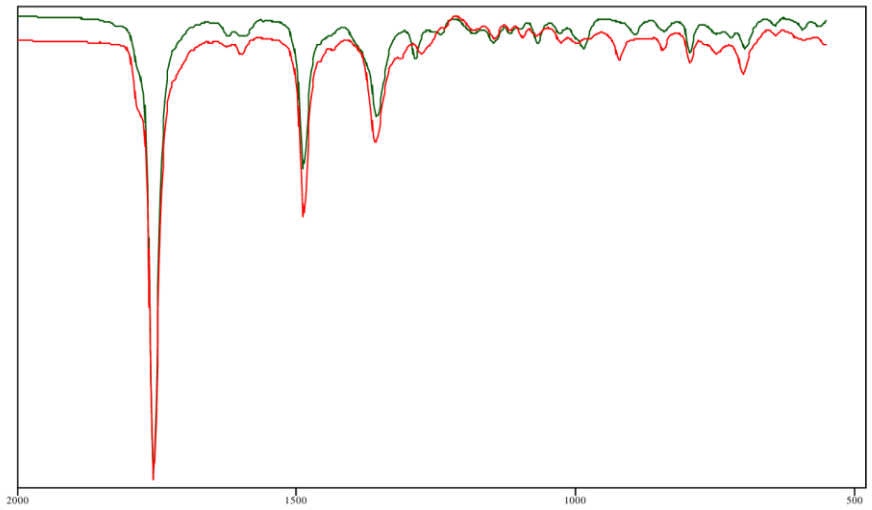


^{1}H NMR (400 MHz, DMSO-d_6) δ ppm 11.00 (s, 1 H) 7.23 - 7.31 (m, 5 H) 7.17 - 7.21 (m, 1 H) 6.99 - 7.02 (m, 1 H) 6.94 - 6.98 (m, 1 H) 4.08 - 4.19 (m, 1 H) 3.06 (br d, *J*=11.59 Hz, 2 H) 2.74 - 2.80 (m, 2 H) 2.53 - 2.60 (m, 2 H) 2.33 (qd, *J*=12.28, 3.69 Hz, 2 H) 2.12 (br t, *J*=11.80 Hz, 2 H) 1.65 (br d, *J*=11.90 Hz, 2 H)

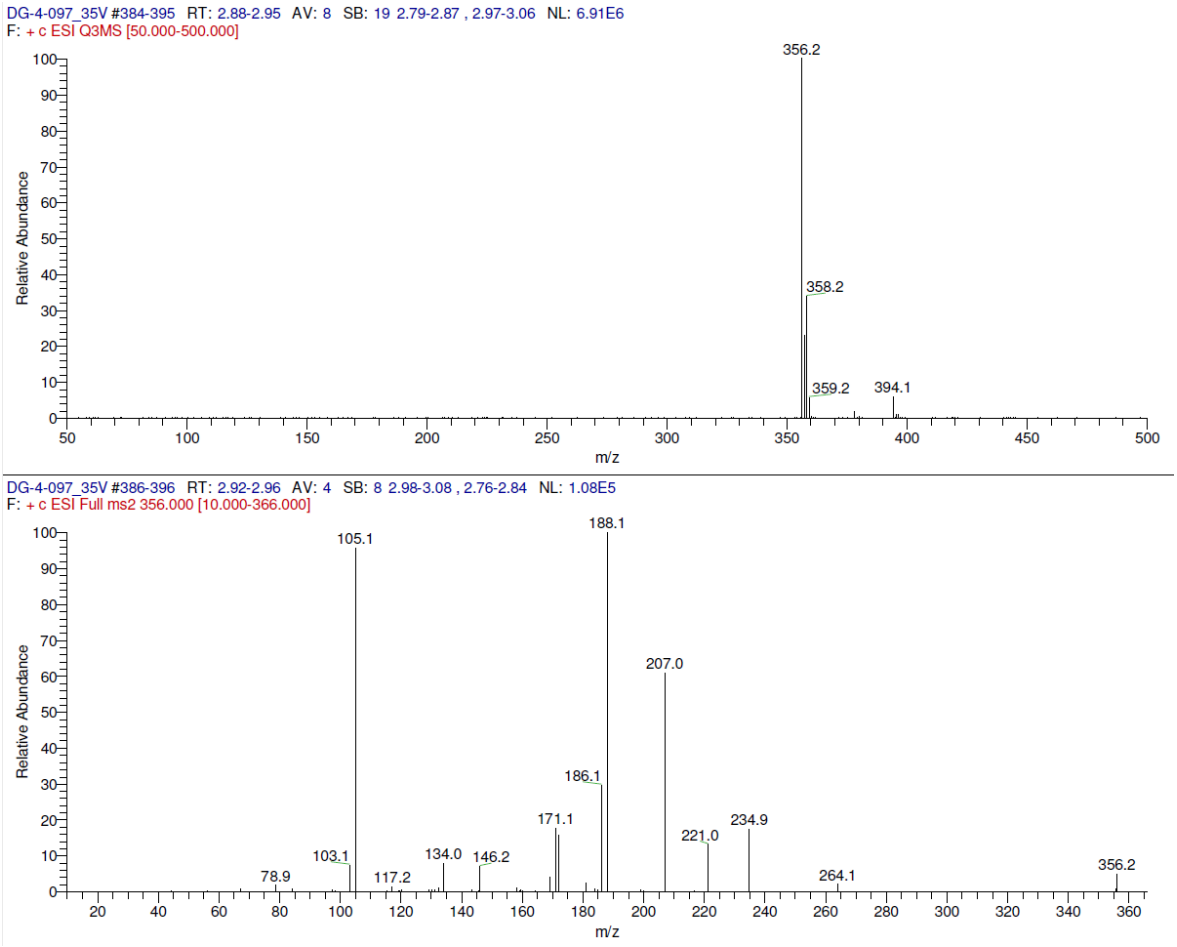
GC-IR Data
(Top: *N'*-phenethyl-5-chloro *nor*-orphine; Bottom: *N'*-phenethyl-6-chloro *nor*-orphine)

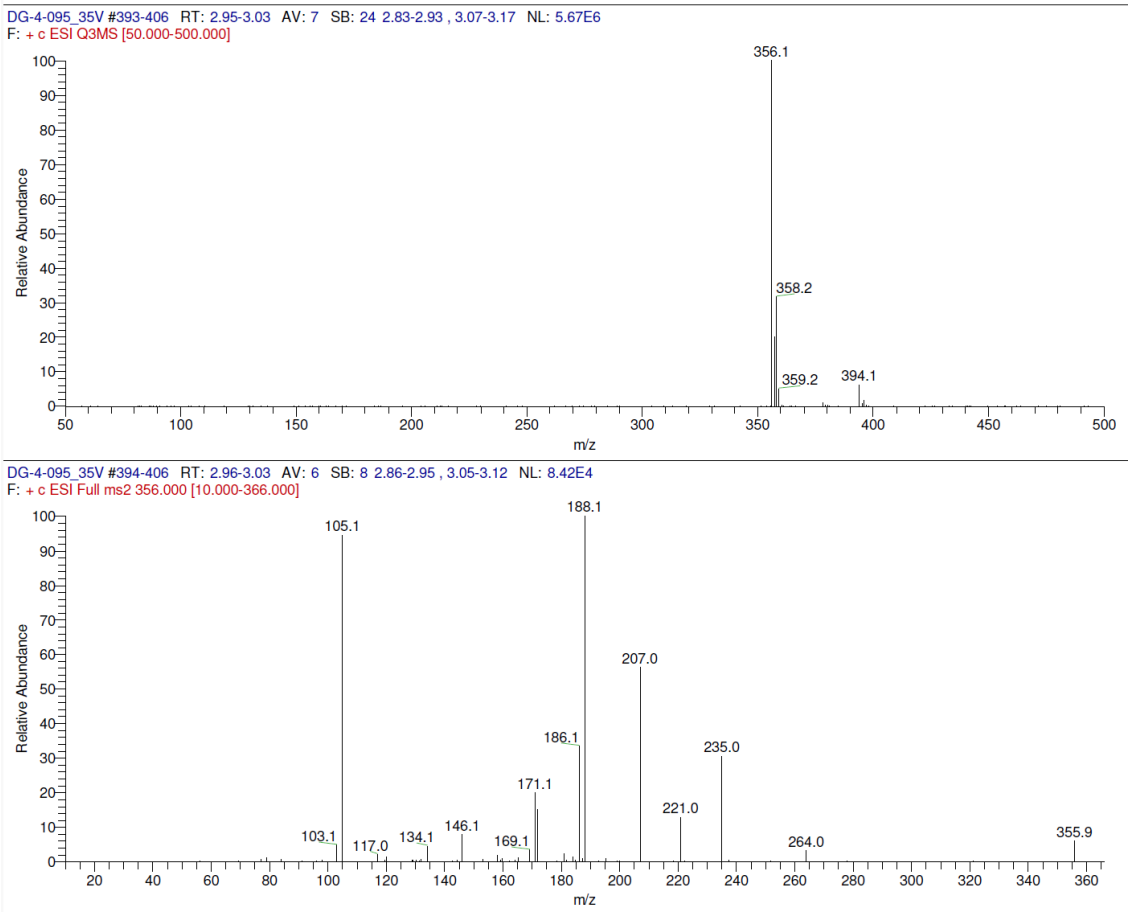






ESI-HRMS data
(Top: *N'*-phenethyl-5-chloro *nor*-orphine; Bottom: *N'*-phenethyl-6-chloro *nor*-orphine)





Neither of these two compounds are known in the chemical literature, and pharmacological data on related *N*-phenylethyl orphine structures is scarce. The psychoactive and toxicological properties of this new subclass of orphine-related substances is currently unknown.

RECOMMENDED CITATION

Drug Enforcement Administration. DEA Overdose Surveillance Exchange (DOSE): New Substance Public Alert – *N*'-phenethyl-5-chloro nor-orphine. Dulles, Virginia: US. Special Testing and Research Laboratory, DEA; 2026, November 18.

Click or scan QR code to contact and learn more about DOSE.