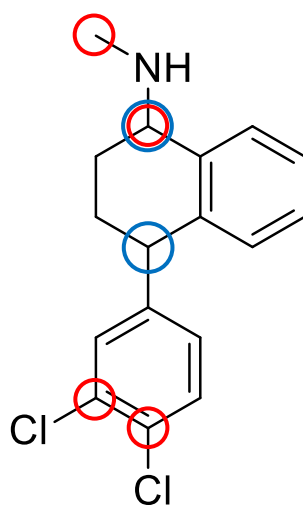


TP Part 3 Report Sheet

You may mark all of the following directly on this one structure if you make a color-coded key that is EASY for me to follow:

1. Alpha carbons color : Red
2. Chiral carbons color : Blue
3. Anomeric carbons color : none
4. Peptide bonds : none

Draw structure:



Explanations for why any of the above NOT present:

Anomeric carbon is not present as the ring systems are not formed from nucleophilic addition of carbonyl groups. Peptide bond is not present as the compound lacks carbonyl groups.

5. Does your structure have the ability to form a (circle): hemiacetal or acetal or neither if methanol is added in the presence of heat and acid?

Draw the product.

No, it does not have the ability to do so.

If you answered **neither to above question you must answer this question instead**. Does your structure have the ability to form a (circle): **hemiacetal or acetal or neither** if acetone is added in the presence of heat and acid?

Draw the product.

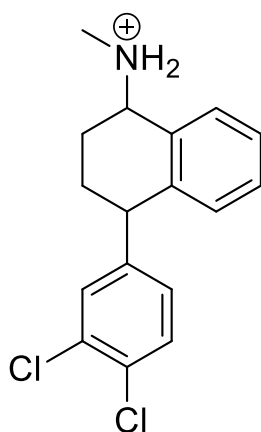
No, it also does not have the ability to do so.

If you answered **neither to both previous questions you must explain why neither reaction would work below**.

The compound lacks both carbonyl and alcohol group, hence it is not possible for the compound to form acetal or hemiacetal..

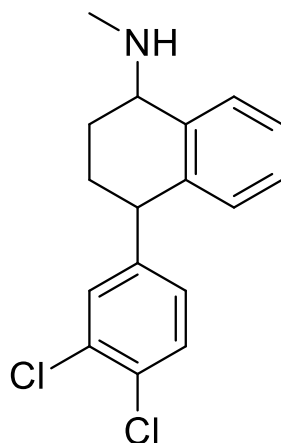
6. Draw molecule at pH = 1

Overall charge: +1



7. Draw molecule at pH = 12

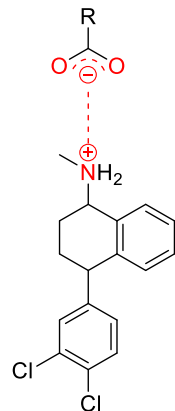
Overall charge: 0



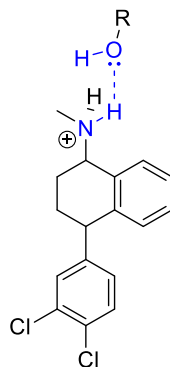
8. If your molecule was the side chain of an amino acid, in a protein, what tertiary structure stabilizers could present? Make a key and use color to highlight what part of your structure can be stabilized in each manner?

Draw structure:

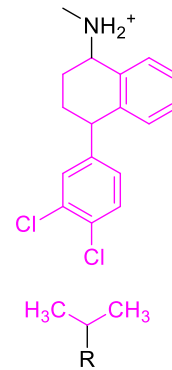
Ionic interactions



Hydrogen bonding



Van der Waals interactions



KEY:

Hydrophobic interactions: Purple

Salt bridge: Red

Covalent bonds: Not prominent

Hydrogen bonding: Blue

Metal ion coordination: Not possible, the amine is positively charged at physiological pH.

9. What components of the plasma membrane might your drug interact with? Explain.
Can use as many components as you need (may need more or less)

Component 1 and why: Hydrophilic head (phosphate group) of phospholipid bilayer, as it can form ionic interactions with the positively-charged amine group.

Component 2 and why: Carbohydrate (glycolipid or glycoprotein), as it can form hydrogen bonds with the amine group.

Component 3 and why: Hydrophobic tail of the phospholipid bilayer, as the rest of the compound is relatively non-polar. This allows the compound to diffuse into the cell.

10. Which tests that we did in lab this semester would possibly work on your molecule? List the test, why it tests positive, and what color/appearance the positive test result would be. If a test is not applicable then leave it blank.

Test	Why positive	Color
Solubility with water	If formulated in its hydrochloride salt, the compound is charged.	-
Chromate test	-	-
Iodoform test	-	-
Benedict's test	-	-
Fermentation test	-	-
Iodine test	-	-
Seliwanoff's test	-	-
Biuret's test	-	-
Ninhydrin test	Secondary amine reacts with ninhydrin to form iminium salt.	Yellow-orange product
Xanthoproteic test	The compound has aromatic ring which reacts with nitric acid.	Yellow or Dark-yellow product