Problem 26  Chemical Structure and Absolute Stereochemistry of Coniine

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\begin{align*}
&\text{CH}_3\text{CH}_2\text{CH}_2\text{N}^+\text{MeCH}_3\text{CH}_2\text{CH}_2\text{N}^+\text{Me} \\
&\xrightarrow{1. \text{CH}_3\text{I (Excess)}} \xrightarrow{2. \text{Ag}_2\text{O, H}_2\text{O}} \xrightarrow{\Delta} \text{CH}_3\text{CH}_2\text{CH}_2\text{N}^+\text{MeCH}_3\text{CH}_2\text{CH}_2\text{N}^+\text{Me}
\end{align*}
\]

Problem 27: The chemistry and identification of flavonoids

1.

2. a) down field. The $^1$H-NMR resonance of phenolic proton involvement in hydrogen bonding will be observed at very low magnetic field (~ 12ppm).

3.

4. $^{13}$C-NMR would be expected to show three characteristic peaks of the three different carbonyl groups.
Problem 28: Synthesis of peptides

1. Best answers are 5 and 2.

2. Dipeptide I

3. Dipeptide II

4. The cyclic dipeptides (diketo piperazines) must also be considered:

5. Dipeptide III

6. Dipeptide IV

2. Benzyl chloroformate, reagent N° 4, would react easily with an amine in the following way:

4. Benzyl chloroformate, reagent N° 4, would react easily with an amine in the following way:

5. If we assume the intermediate formation of a carbonium ion, the ease of formation of such ion would parallel its stability. Electron delocalization is most extensive in case D:

And least effective in case A:

In the same way the cation from B is better stabilized than the cation from C. Therefore, the order of increasing lability is: A<C<B<D.
Problem 29: Oleuropein hydrolysis

1.

2.

3.

The correct structure is C
Problem 30: Stereochemistry of the Addition Reactions to Alkenes

a)

b)

c)

d)

No Yes
No Yes
Yes Yes
No No
Problem 31: Identification of Organic Compounds

Problem 32: Lipases

a)

b)

c)