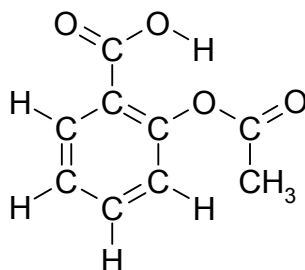


General Chemistry II

Aspirin, acetylsalicylic acid, has many desirable properties. Unfortunately it is a weak acid with $K_a = 3.0 \times 10^{-4}$.



- What is the hybridization of the C atoms of the ring?
 - Of the C atoms in the $-\text{CO}_2\text{H}$ group and $-\text{O}_2\text{CCH}_3$ group?
 - Of the O atoms in the $-\text{OH}$ group and in the CO_2H and $-\text{O}_2\text{CCH}_3$ groups?
- Give the approximate values for the following bond angles in aspirin:
 - C-C-C in the ring
 - O-C=O
 - C-O-H
 - C-C-H
- Experiment shows that the solubility of acetylsalicylic acid is 2.00 g per liter of aqueous solution. What is the pH of the solution?
- If you have aspirin in your stomach, and if the pH of gastric juice is 1.5, calculate the ratio of the acetylsalicylate concentration to acetylsalicylic acid concentration that will be present in the stomach.
- Assume that you have added sufficient sodium hydroxide to neutralize all the acetylsalicylic acid in a saturated solution. What is the pH of the final solution?