Preparation of Aspirin, Methyl Salicylate and NylonExperiment #6Pre-Lab Exercise

1. Briefly describe the difference between an acid and an ester. Give an example of each.

2. Show the chemical reaction for the hydrolysis of the ester, ethyl acetate, indicating the two products of this reaction.

3. Describe what is meant by an amide, showing the structure of at least one example of a compound that is an amide. Be sure to give the correct name of the compound you have drawn. (Check your text book in chapter 18 on Amines and Amides).

- 4. What kinds of chemical compounds are aspirin (acetyl salicylic acid) and methyl salicylate (i.e., alcohols, aldehydes, ketones, acids, esters, amides, etc)?
- 5. Describe what physiological effects aspirin causes in the body, *e.g.* regarding body temperature, pain, swelling and thrombosis (blood clotting). Does it inhibit an enzyme? If so, what enzyme does it inhibit and what substances are formed by that enzyme? [You should check the text book for information on aspirin's actions].

6. Aspirin belongs to a specific class of drugs known as NSAIDs. What does this acronym stand for? What other drugs are in this class of drugs?

Name _____ Section _____

Preparation of Aspir	in, Methyl Salicylate and Nylon	
Experiment #6		Data & Report Sheet
Part A. Preparation of Aspin	rin	
1. Weight of salicylic acid used		g
2. Weight of aspirin recovered		g
3. Calculate the moles of salid	cylic acid used:	
Moles = =		
molecular weig	ght $(C_7H_6O_3)$	
4. Calculate the moles of	aspirin formed:	
weight (g) [st	les = eight (g) [step 2 above] =	
molecular weig	ght $(C_9H_8O_4)$	
5. Percentage yield =	moles aspirin formed [step 4]	x 100 =
	moles salicylic acid used [step 3]	A 100

Questions

Write the equation for the preparation of aspirin from salicylic acid and acetic anhydride. 1.

2. Have you prepared pure aspirin? Do you expect any other material to be in your product? What impurities might be in your product after washing and filtering it?

3. Are aspirin tablets pure aspirin? If they are not pure aspirin, what else do they contain?

- 4. How would you describe the aroma of methyl salicylate?
- 5. Aspirin and methyl salicylate are both esters of salicylic acid. Do these two different chemical compounds have any similar physiological actions? Describe some of their physiological actions.

6. In the preparation of nylon, there are 2 phases, a lower aqueous phase (containing diaminohexane) and an upper organic phase (with adipoyl chloride). Why is there only a small amount of nylon at the interface of the two phases at any given time, yet it seems you can continue removing it and more appears? What is going on at the interface of the two solutions?

7. List several uses for nylon, giving at least one medical use for this polymer. (You may have to check the internet for uses of nylon).