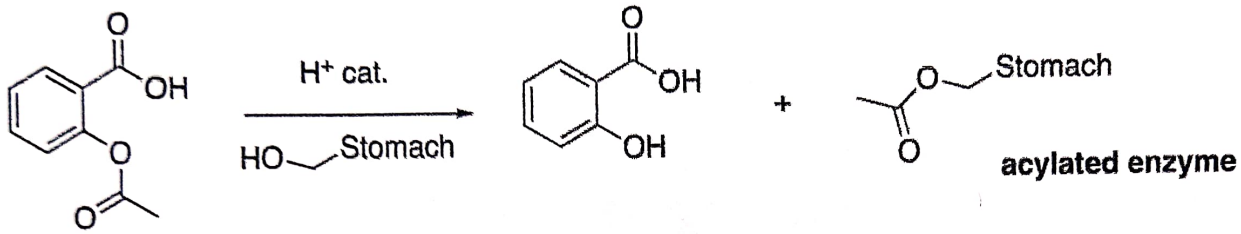
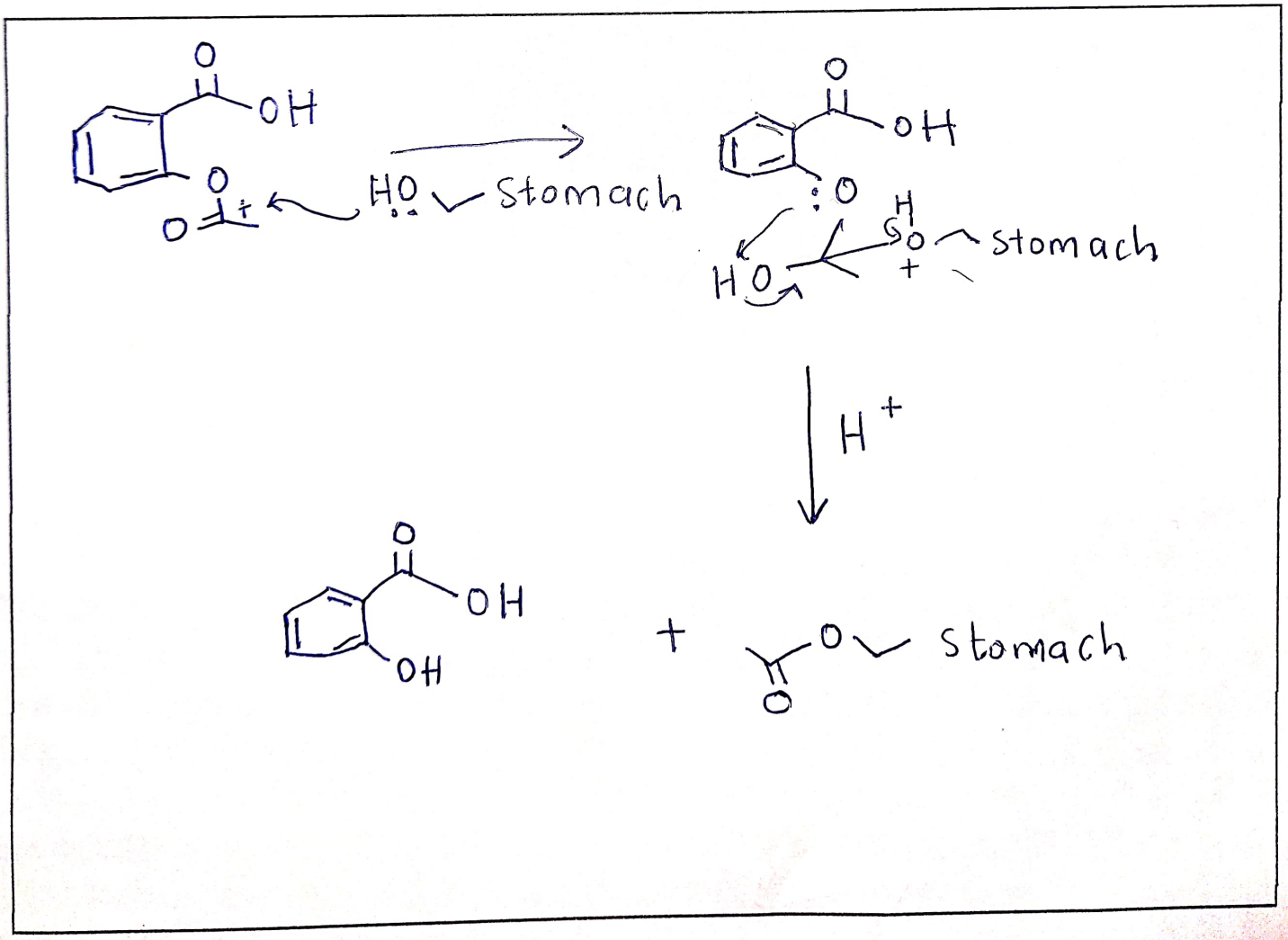
Your Name:

Prodrugs are an area of medicinal chemistry that has been extensively researched over the last several years. Prodrugs are designed to be initially inactive until further activated into the active form of the drug (which could include also esterification or trans-esterification event). For example: Aspirin is a prodrug that gets converted to salicylic acid.

(a) Draw a complete arrow-pushing mechanism showing how aspirin is converted into salicylic acid (say by the stomach acylating enzyme at low pH). A scheme of the overall transformation is shown below. In your peer reviews, comment on any step that needs to be corrected.



Aspirin **Salicylic Acid** **acylated enzyme**



(b) Find a scientific literature review on prodrugs and respond to the following questions which will also be included with your submission and prompt further peer discussion from each group.

1. What is the reference (Journal, year, author first and last name, pages) of the review? You only need to reference the first author listed. This should be shared among your group members. Wikipedia and related references will not be accepted. Use actual scientific literature.

2. What are the structures (draw them out) for the three different prodrugs that you decided to investigate?

3. What is the structure of the active form of each prodrug?

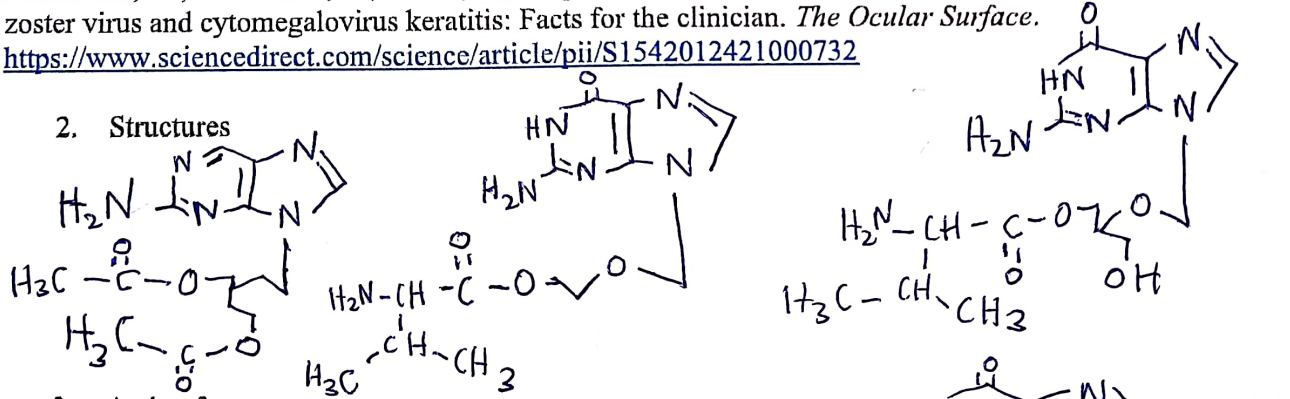
4. What conditions does the prodrug treat?

For the peer review portion, please read each of the references as well as the responses to the questions. Then, ask three additional and insightful questions about one of the prodrugs you have reviewed for which then must be addressed by the person for whom you are providing a peer review for. In other words, what more do you want to know about this prodrug? Please be aware that this is important to the overall grade you receive on the assignment. Be insightful, initiate a discussion. Responders should also provide a concise yet detailed answer to at least try and address the question being asked by the peer reviewers. As always, remember to provide references that you think are important to y our response. Wikipedia and related references will not be accepted.

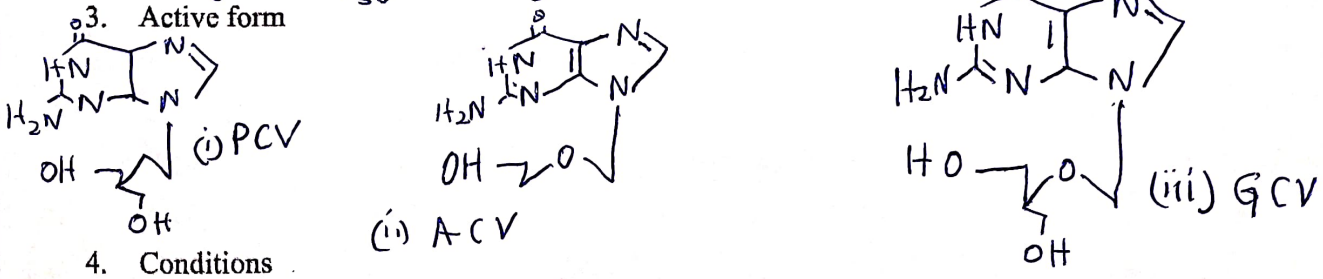
1. REFERENCE

Labetoulle, M., Boutolleau, D., Burrel, S., Haigh, O., & Rousseau, A. (2021). Herpes simplex virus, varicella-zoster virus and cytomegalovirus keratitis: Facts for the clinician. *The Ocular Surface.* https://www.sciencedirect.com/science/article/pii/S1542012421000732

2. Structures



3. Active form



4. Conditions

VACV is used to treat Herpes simplex type 1 and Varicella-Zoster. FCV is used to treat herpes and sores while VGCV is used to treat HSV infections.