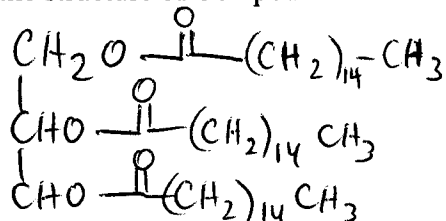


4. a) Extracting nutmeg with ether gives compound A, a low-melting waxy solid that has a very strong IR absorption at 1733 cm^{-1} . Treating Compound A with aqueous base gives one part glycerol and three parts sodium tetradecanoate.

Give the structure of Compound A.

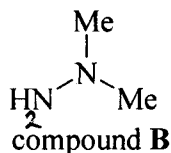
(5 marks)



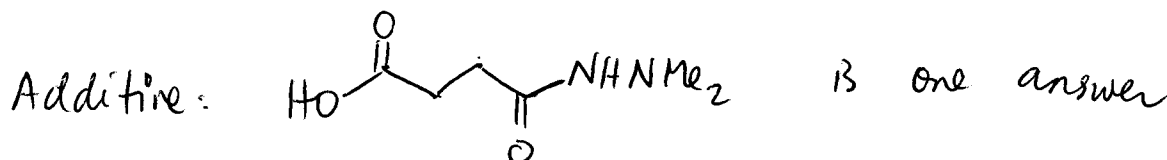
b) Adding chemicals to foods is a growing practice, but not without controversy. Consider the case of a chemical used with apples to retard their growth, thus keeping them on the tree longer and yielding sweeter, juicier fruit.

Concern was raised because since apple juice was slightly acidic, and it had a long shelf time, hydrolysis of the compound could lead to the formation of a toxic hydrazine derivative. In the end, any amounts present were shown to be too small to be dangerous, but the use of the chemical discontinued.

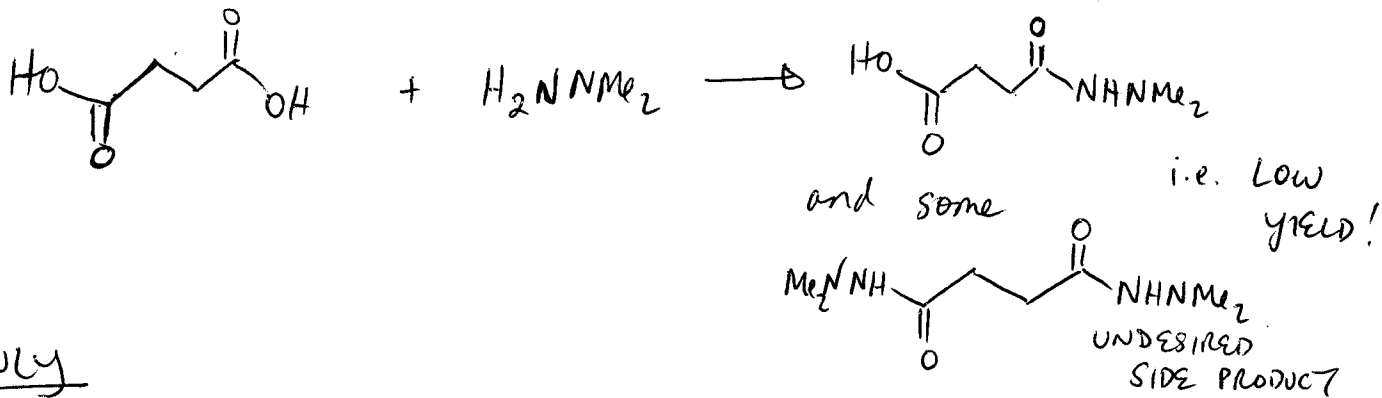
If the hydrolysis products are succinic acid and compound B, what is the structure of the additive?



As the question was (deliberately) vague, there are other valid answers.



Consider how the derivative would be prepared in the first place. What difficulty is associated with preparing it directly from succinic acid and compound B? Explain in a short paragraph some ways to get around this difficulty. (5 marks)



Slowly

Adding the H_2NNMe_2 to a VAST EXCESS of succinic acid would limit the amount of side product