

تفريغ لاب ميديسنال



المحاضرة: 3 Phenytoin Synthesis Part

الصيدلاني/ة: Sara Jaber



الفديو قصي (ربع ساعة)

SYNTHESIS OF PHENYTOIN PART 3

Ali Salama

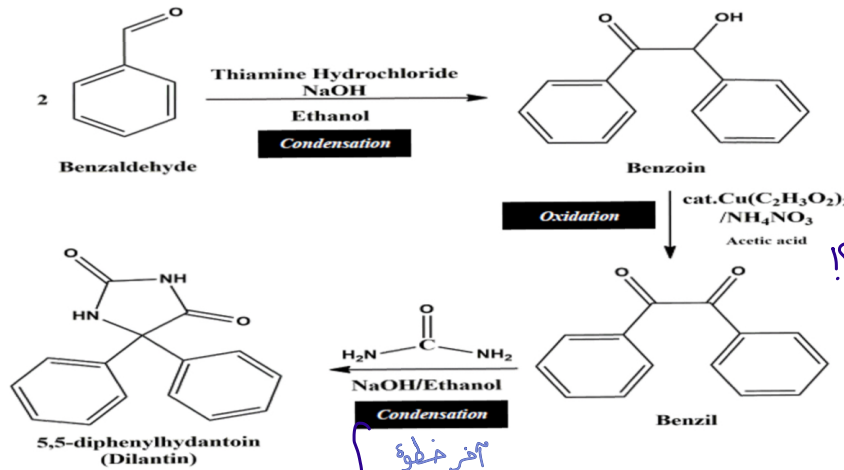


(1)

عزنا والعود احمد
بسم الله

اول دقيقتين مراجعة
عن الخطوات
السابقين

General scheme of synthesis



سؤال الكوين (Cis, trans)؟!

هو مش Cis ولا Trans 😊

لما يكون عندي Double Bond

يكون في Cis, Trans

وهو ما في *

(2)

مختلف عن ال Condensation

اي بال Cycle الأولى لانه مش نفس الجزيئات

مع بعضي (2 Benzil / Aldehyde)

1 Benzil + 1 Urea

السؤال الثاني Melting Point؟!

Benzoin له درجة اقل
لانه عنده H-Bond

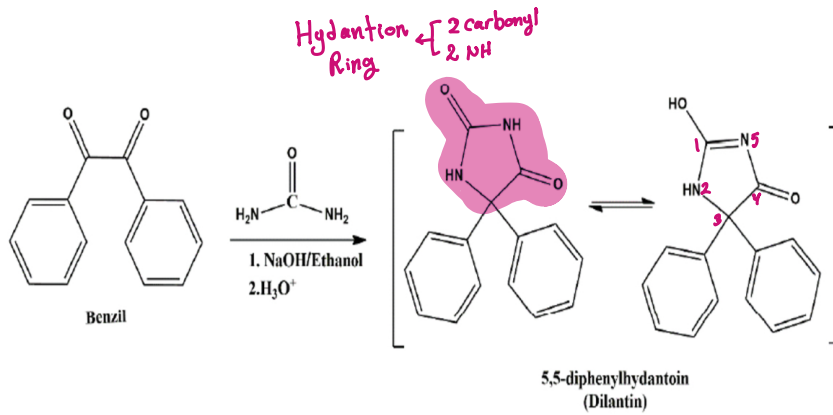
Step 3 : condensation of benzil with urea

- The condensation of benzil with urea, catalyzed by a strong base like sodium hydroxide (NaOH), is a reaction that synthesizes phenytoin (Dilantin), an anticonvulsant drug. The reaction involves the nucleophilic attack of deprotonated urea on one of benzil's carbonyl groups, followed by an intramolecular cyclization and a benzilic acid rearrangement that includes a-phenyl shift. The final product, phenytoin is typically isolated by acidifying the reaction mixture and collecting the resulting precipitate.

بيدي الهيدرو
Acid

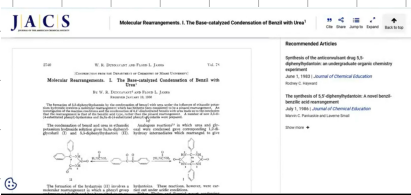
(3)

Step 3 : condensation of benzil with urea



(4)

* الفكرة الي الدكتور به يوصلها
في كيت Mechanism
لتخليج ال phenytoin

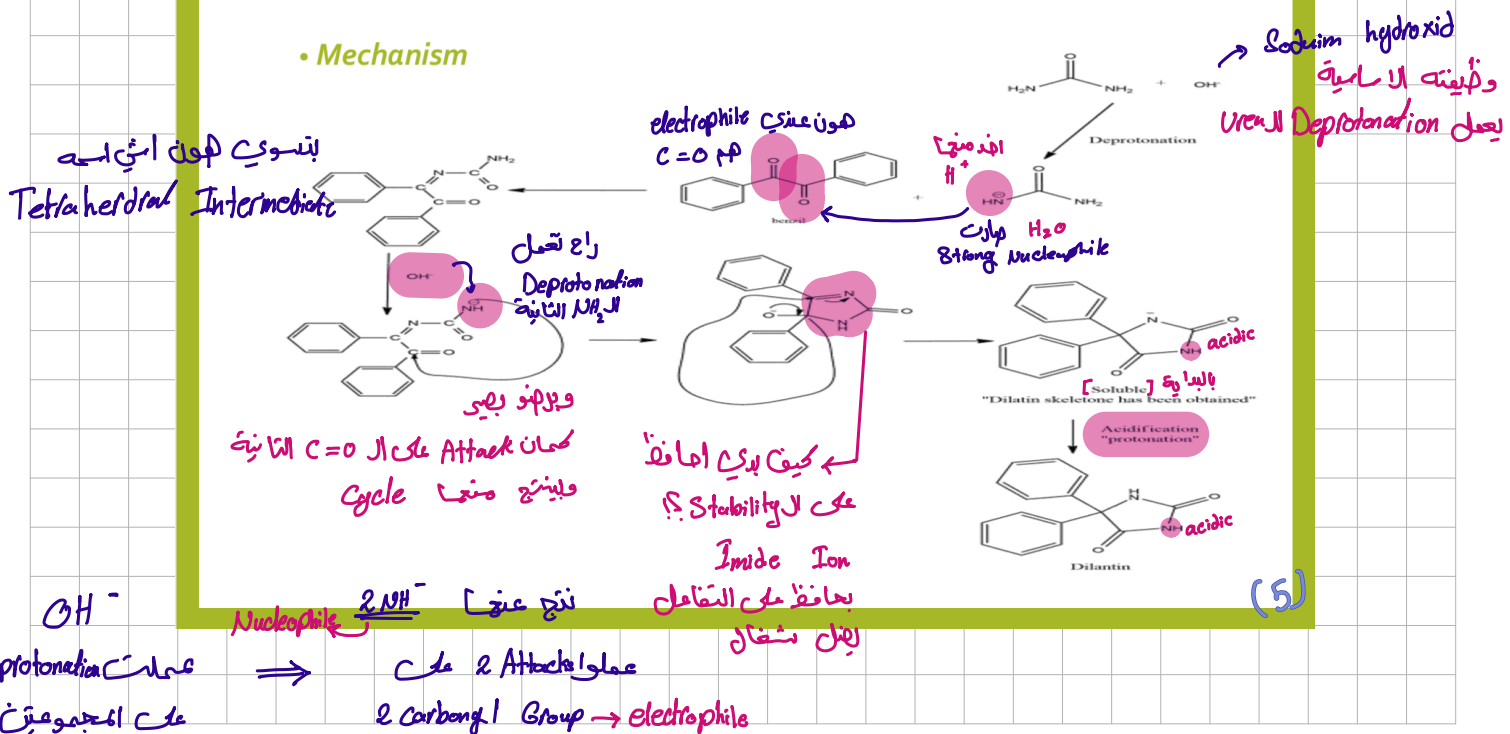


انجذبت دراسات على هاي MBA
من 1956
ورجعوا عملا دراسات بـ 83 و 86
وفي دراسات جديدة بال 2025

هاي اكثر وحدة
مهمة

Step 3 : condensation of benzil with urea

• Mechanism



(5)

Phenytoin synthesis

Experiment 3 : Condensation of benzil and urea

① weigh 0.4 g of benzil compound prepared in the previous lab.

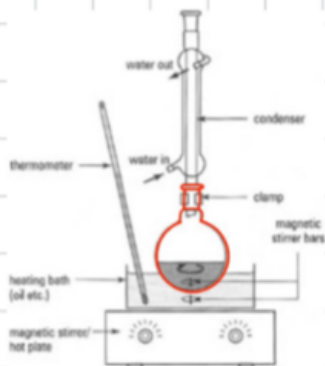


② In a round bottom flask add 0.4 g of the benzil compound, 200 mg urea, 6 ml absolute ethanol and shake, then add 1.2 ml of 30% aqueous sodium hydroxide and mix well.



③ attach the flask to the reflux condenser for 1 hour

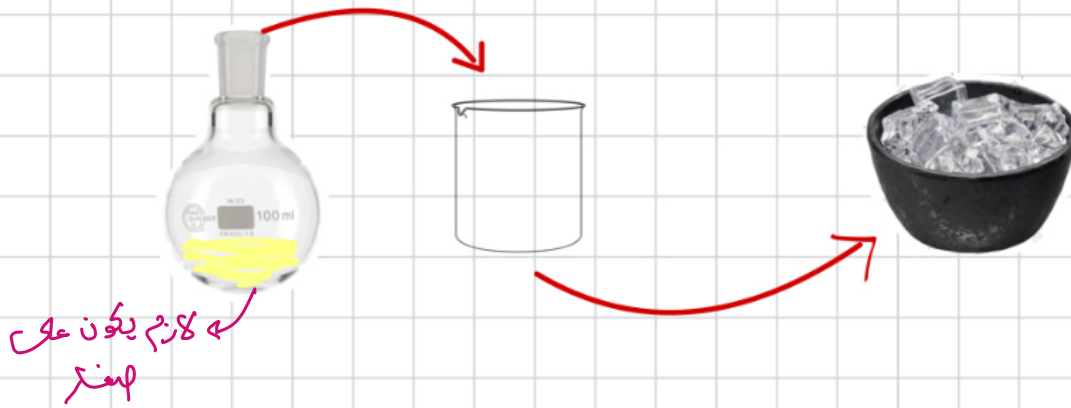
کما ذابته افضل
وبهافه مكن
ال Cycle اي
نتجبت انفسا
لتكسي



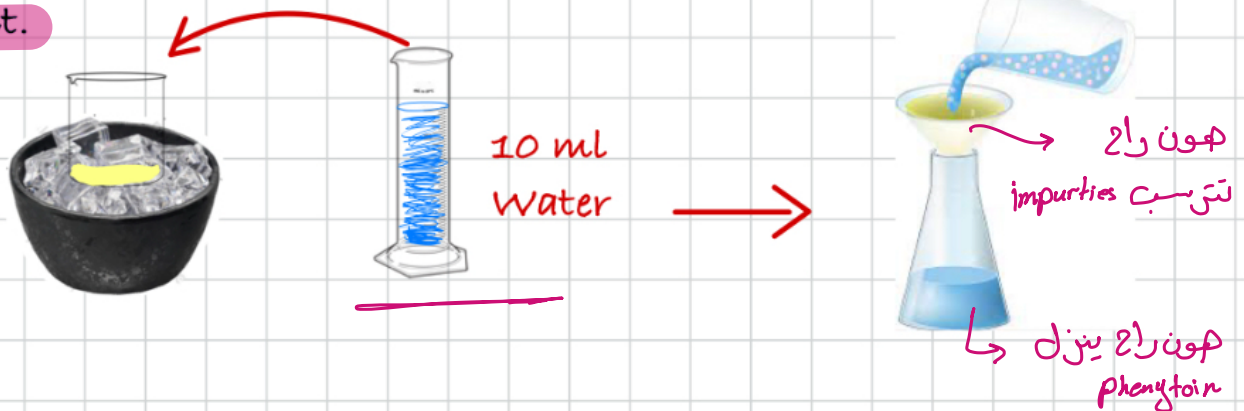
Boiling
Chips

Reflux condenser

③ Transfer your mixture to a 250 ml beaker and cool it in the ice bath .



④ Add 10 ml of water and filter the solution to remove the soluble side product.



⑤ Acidify your filtrate using 20% HCl to precipitate phenytoin (to get pH = 2 red on litmus paper)



⑥ cool it in the ice bath then collect your product using suction filtration (rinse with water)

