

Study Question 7d: Deciphering Polyketide Products

Albocycline is a polyketide-derived antibiotic with activity against MRSA. Its structure is shown below, along with the linear last structure on the PKS enzyme complex. After the PKS is done, there are some further modifications involving other enzymes that we haven't studied: a double bond is isomerized, an additional alcohol is added, and one alcohol is converted to a methyl ether.

1. On the right hand structure, put a wavy line through each bond that was formed via a Claisen condensation as the growing molecule was passed down the assembly line.
2. What was the starter unit for albocycline? Give the name or structure.
3. List each unique extender unit and how many of each were required to assemble albocycline. You may give names or structures.
4. Comparing the two structures, which alkene was isomerized? Circle it on the albocycline structure.
5. How many of the PKS modules had an active enoyl reductase (ER)?
6. Draw a mechanism showing how the right hand structure can be cyclized to the 14-membered lactone (the left hand structure). Note: ignore the additional modifications and focus on the cyclization mechanism.

