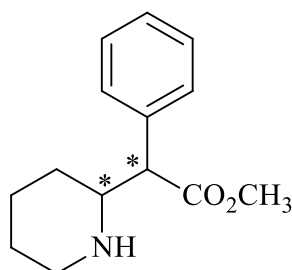
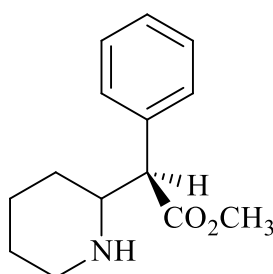


- Methylphenidate, also known as Ritalin, is a psychostimulant drug approved for the treatment of attention-deficit disorder. Identify all stereogenic (chiral) centres in methylphenidate by clearly marking each with an asterisk (*) on the structure below.

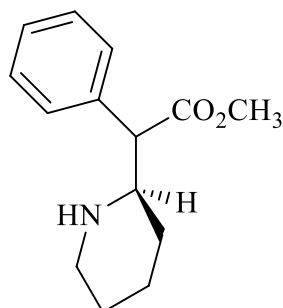
methylphenidate



Using a stereogenic centre you have identified, draw the (*R*)-configuration of that centre.



or



How many stereoisomers are there of methylphenidate? Describe the relationships between these isomers.

4: each isomer has 1 enantiomer and 2 diastereoisomers

Ritalin is generally sold as the hydrochloride salt, formed when methylphenidate is treated with dilute hydrochloric acid. Draw the structure of this salt and suggest why this is the preferred compound for sale.

The hydrochloride salt is soluble in water, which generally means better bioavailability.

Salt will have better stability - amines are prone to aerial oxidation.

