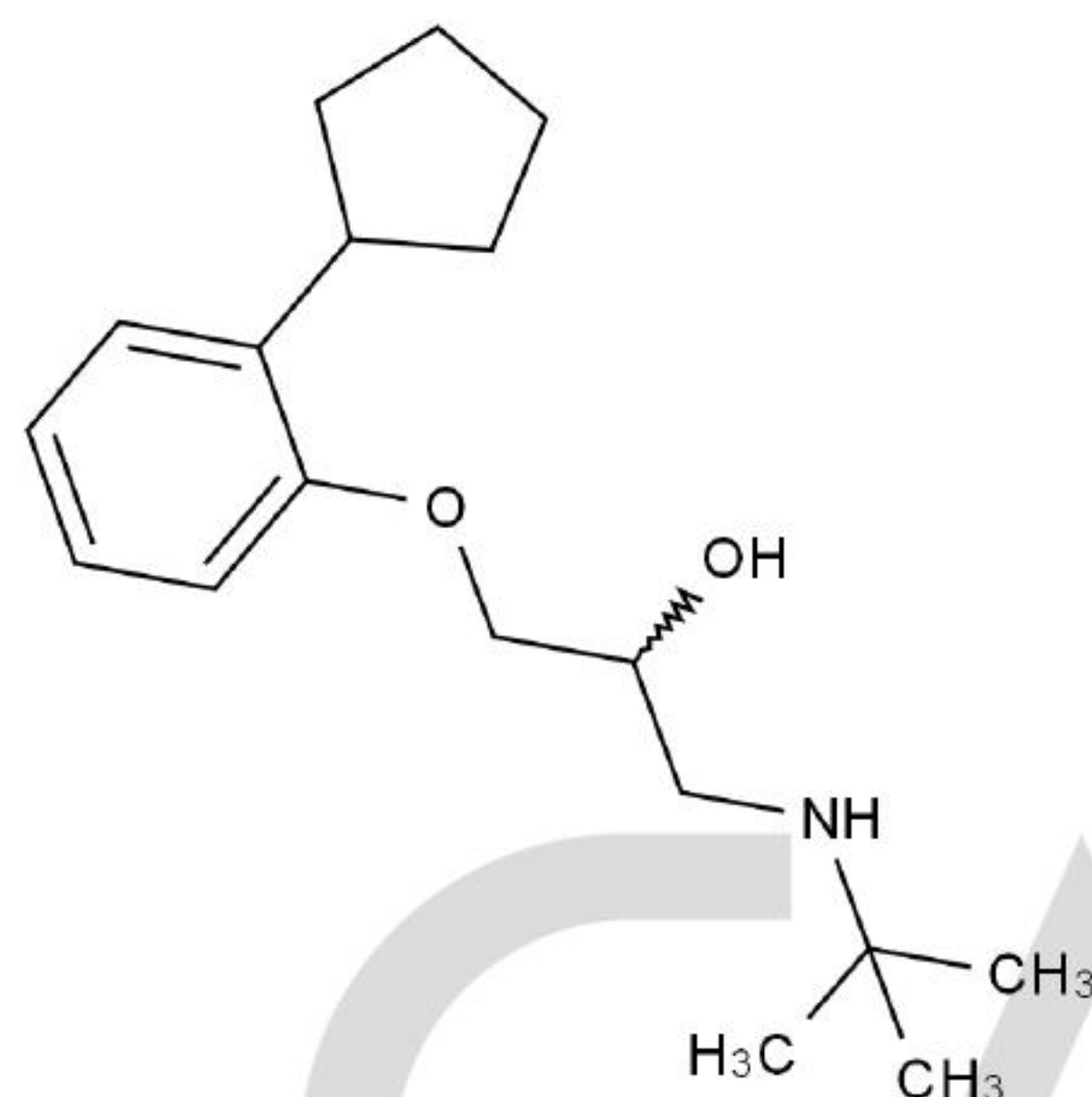


Certificate of Analysis

Reference Material

Product Name:	rac Penbutolol	Catalogue Number:	CCAD300567
Chemical Name:	N/A	Lot Number:	1129-RD-0025
CAS Number:	36507-48-9	Expiry Date:	Dec 05, 2027
Molecular Formula:	C ₁₈ H ₂₉ NO ₂	Storage:	2°C ~ 8°C Protected from light and Sealed
Molecular Weight:	291.43		

Chemical Structure:



Test Items	Method	Results
Appearance	Visual inspection	White Powder
Identification	LCMS&HNMR	Confirmed
Purity	HPLC	96.318%
Loss On Drying	TGA	1.6076%
Assay		94.8%
Uncertainty		±2.0%

Comment:

1. The calculation of the 100% method follows the formula (calculated on the non-dried basis):

$$\text{Assay (\%)} = (100\% - \text{Loss On Drying}) * \text{Purity HPLC (\%)} / 100\%$$

Loss On Drying is considered as absolute effect, HPLC purity is considered as relative effect.

2. The uncertainty values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.

Signature:

Prepared by:

Xenia

Reviewed by:

Hinlam

Aporoved by General manager:

David

Date: Dec 06, 2022

Date: Dec 06, 2022

Date: Dec 06, 2022

