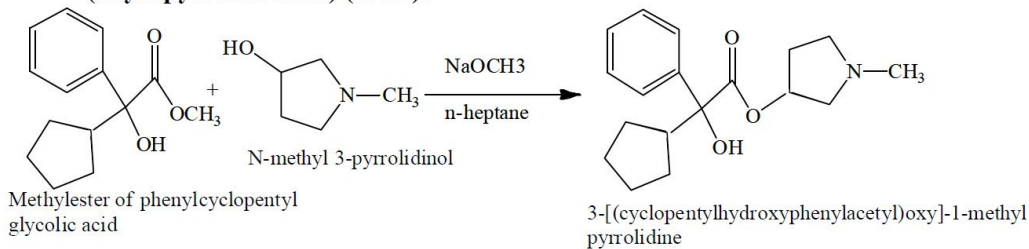


Manufacturing Process Flowchart Glycopyrrolate, USP (Cat# G1425)

1. Route of synthesis:

Stage I: Manufacture of 3-[(cyclopentylhydroxyphenylacetyl)oxy]-1-methyl pyrrolidine (Glycopyrrolate base) (GCB):

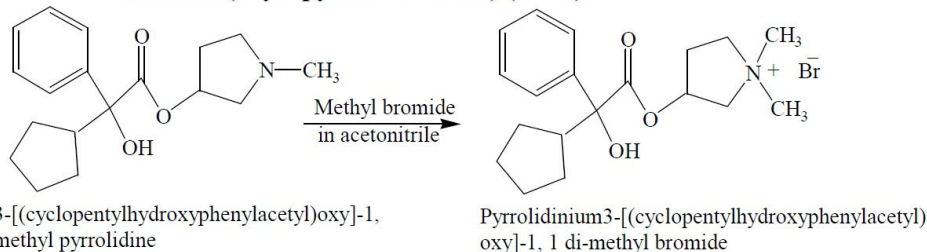


M.W.: 248.32
M.F.: C₁₅H₂₀O₃
CAS NO.: 10399-13-0

M.W.: 101.15
M.F.: C₅H₁₁NO
CAS NO.: 13220-33-2

M.W.: 303.396
M.F.: C₁₈H₂₅NO₃
CAS NO.: 13118-11-1

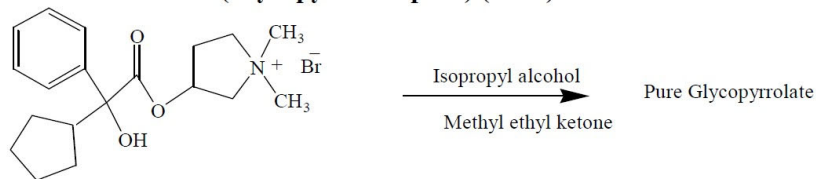
Stage II: Manufacture of pyrrolidinium 3-[(cyclopentylhydroxyphenylacetyl)oxy]-1,1-dimethyl-, bromide (Glycopyrrolate Crude) (GCC):



3-[(cyclopentylhydroxyphenylacetyl)oxy]-1-methyl pyrrolidine
M.W.: 303.396
M.F.: C₁₈H₂₅NO₃
CAS NO.: 13118-11-1

Pyrrolidinium 3-[(cyclopentylhydroxyphenylacetyl)oxy]-1,1-dimethyl bromide
M.W.: 398.3
M.F.: C₁₉H₂₈BrNO₃
CAS NO.: 51186-83-5

Stage III: Purification of pyrrolidinium 3-[(cyclopentylhydroxyphenylacetyl)oxy]-1,1-dimethyl-, bromide (Glycopyrrolate pure) (GCP):



Pyrrolidinium 3-[(cyclopentylhydroxyphenylacetyl)oxy]-1,1-dimethyl bromide

M.W.: 398.3
M.F.: C₁₉H₂₈BrNO₃
CAS NO.: 51186-83-5

M.W.: 398.3
M.F.: C₁₉H₂₈BrNO₃
CAS NO.: 51186-83-5

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