Best Practice for Searching the Pharmaceutical Substances (PS) Database

Pharmaceutical Substances is designed to be a complete reference guide to pharmaceutical compounds of significance. It provides a compendium of more than 2,800 active pharmaceutical ingredients (API's) of interest to the chemical and pharmaceutical industries.

New (e.g., nirmatrelvir) and well-known continuously updated (e.g., mint camphor) substances make PS to a valuable source for research and business development.

Syntheses, patent information and applications of drugs are accessible via STNext standard search and display fields. For more information, please see the database summary sheet

(https://www.cas.org/sites/default/files/documents/ps_110522.pdf).

Since this is **not a structure searchable database**, it is recommended to retrieve the API with one of the following options:

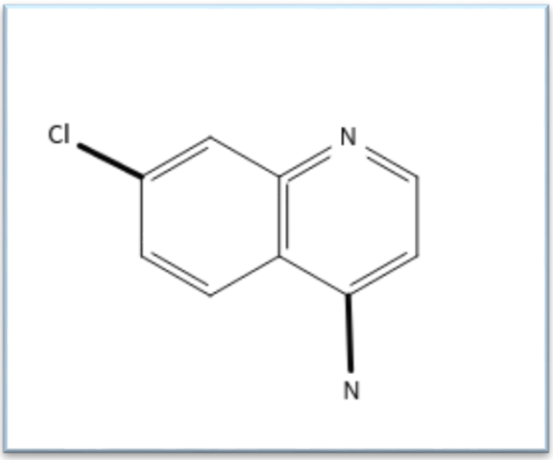
- search for Registry Number(s) of API(s) (most precise)
- structure search in CAS REGISTRY®, restriction to PS/LC, and crossover (see example)
- search for Chemical Name(s) (/CN) or Chemical Name Segment(s) (/CNS)

E*xample: structure search in REGISTRY and crossover to PS (status: October 2022, displayed record has been shortened)*

```
=> FIL REG

=>

Uploading structure file: chloroquine sub
```

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L1 STRUCTURE UPLOADED

=> S L1 FUL

…
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L2         27019 SEA SSS FUL L1

=> S L2 AND PS/LC

          12189 PS/LC

L3            5 L2 AND PS/LC

=> SEL l3 RN 1-

…

=> FIL PS

…

=> S e1-5

L4            5 L3

=> D IALL

 L4     ANSWER 1 OF 5 PS  COPYRIGHT 2022 THIEME on STN.

ACCESSION NUMBER:        30120   PS
ENTRY DATE:              Entered STN: 24 Aug 2022
                         Last updated on STN: 24 Aug 2022
CHEMICAL NAME:           GENERIC: Chloroquine
                         SYSTEMATIC: N4-(7-chloro-4-quinolinyl)-N1,N1-diethyl-
                         1,4-pentanediamine
CLASSIFICATION CODE:     P01BA01
THERAPEUTICS:            antirheumatic; antimalarial
CAS REGISTRY NUMBER:     54-05-7
MOLECULAR FORMULA:       C18H26ClN3
INCHI CODE:              WHTVZRBIWZFKQO-UHFFFAOYSA-N
MOLECULAR WEIGHT:        319.88
EINECS NUMBER:           200-191-2
LD50:                    21.6 mg/kg (M, i.v.); 311 mg/kg (M, p.o.); 60 mg/kg (R,
                         i.v.); 330 mg/kg (R, p.o.)
FORMULATION:             amp. 250 mg/5 ml; syrup 15 mg; tabl. 50 mg, 155 mg, 300
                         mg (as phosphate)
DEFINITION:              Quinolinamines, alkoxy or chloro derivatives
DERIVATIVES:             CN.DRV    diphosphate
                         LSF.DRV   C18H26ClN3.2H3PO4
                         MW.DRV    515.87
                         LD50.DRV  500 mg/kg (M, p.o.)
                         RN.DRV    50-63-5
                         EIN.DRV   200-055-2
                         CN.DRV    sulfate (1:1)
                         LSF.DRV   C18H26ClN3.H2SO4
                         MW.DRV    417.96
                         RN.DRV    132-73-0
                         EIN.DRV   205-077-6
                         CN.DRV    sulfate (1:1) monohydrate
                         LSF.DRV   C18H26ClN3.H2O4S.H2O
                         MW.DRV    435.97
                         RN.DRV    6823-83-2
                         CN.DRV    dihydrochloride
                         LSF.DRV   C18H26ClN3.2HCl
                         MW.DRV    392.80
                         RN.DRV    3545-67-3
                         EIN.DRV   222-592-1
                         CN.DRV    2,5-dihydroxybenzoate
                         LSF.DRV   C18H26ClN3.x C7H6O4
                         MW.DRV    0
                         RN.DRV    16510-14-8
                         EIN.DRV   240-578-3
                         CN.DRV    diorotate
                         LSF.DRV   C18H26ClN3.2C5H4N2O4
                         MW.DRV    632.07
```

The LC (CAS Registry Number Locator) search and display field indicates databases that have searchable CAS Registry Numbers and contain additional information for the Registry Number in the record. It lists STN files, regulatory listings, and other sources that have been identified as citing that Registry Number.

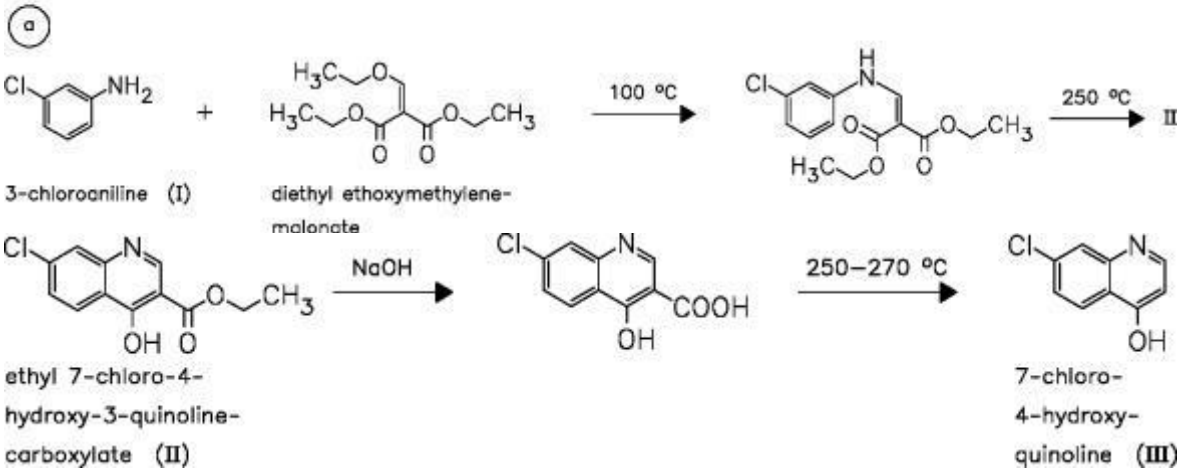
LD50.DRV 1130 mg/kg (M, p.o.)
RN.DRV 16301-30-7
EIN.DRV 240-389-6

TRD
Trade Data

Launch Country	Trade Name	Company Name (Manufacturer)	Comment
D	Resochin	Bayer Vital	
F	Nivaquine	Sanofi-Aventis	
F	Savarine	AstraZeneca	
GB	Avloclor	AstraZeneca	
I	Clorochina	Formulario Nazionale; Bayer	
USA	Aralen	Sanofi	as hydrochloride
USA	Aralen	Sanofi	as phosphate

PREPARATIONS:

starting products:
1. 4.7-Dichloroquinoline



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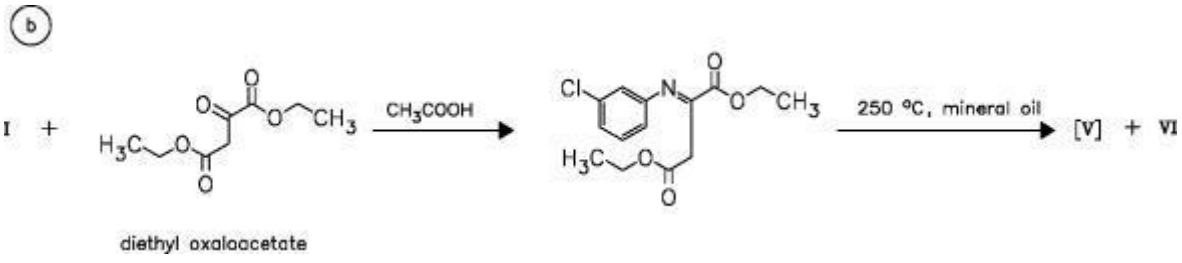
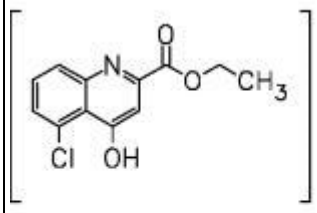
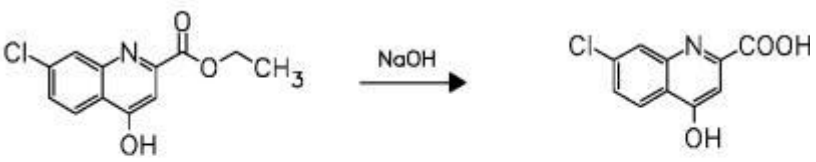




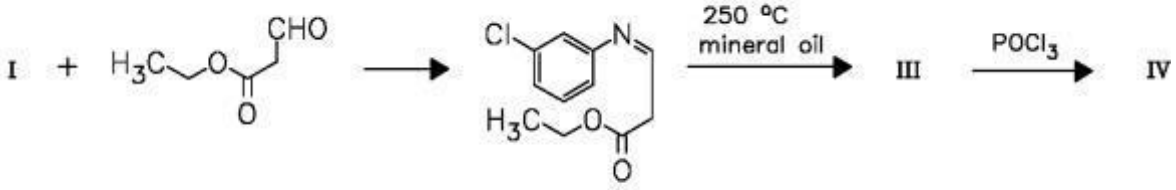
ethyl 5-chloro-4-hydroxy-2-quinoline-carboxylate (V) (removal by crystallization from acetic acid)



ethyl 7-chloro-4-hydroxy-2-quinoline-carboxylate (VI)

(VII)

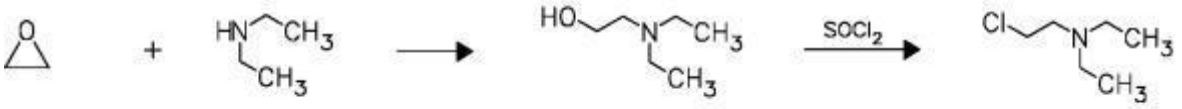
(c)



ethyl formyl-acetate

2. Novoldiamine

(a)

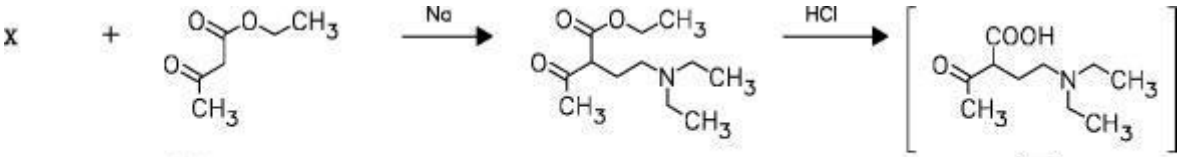


ethylene oxide (VIII)

diethyl amine (IX)

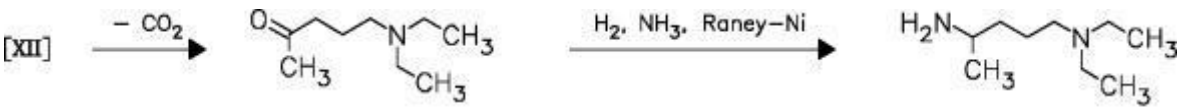
2-diethylamino-ethanol

2-diethylamino-ethyl chloride (X)



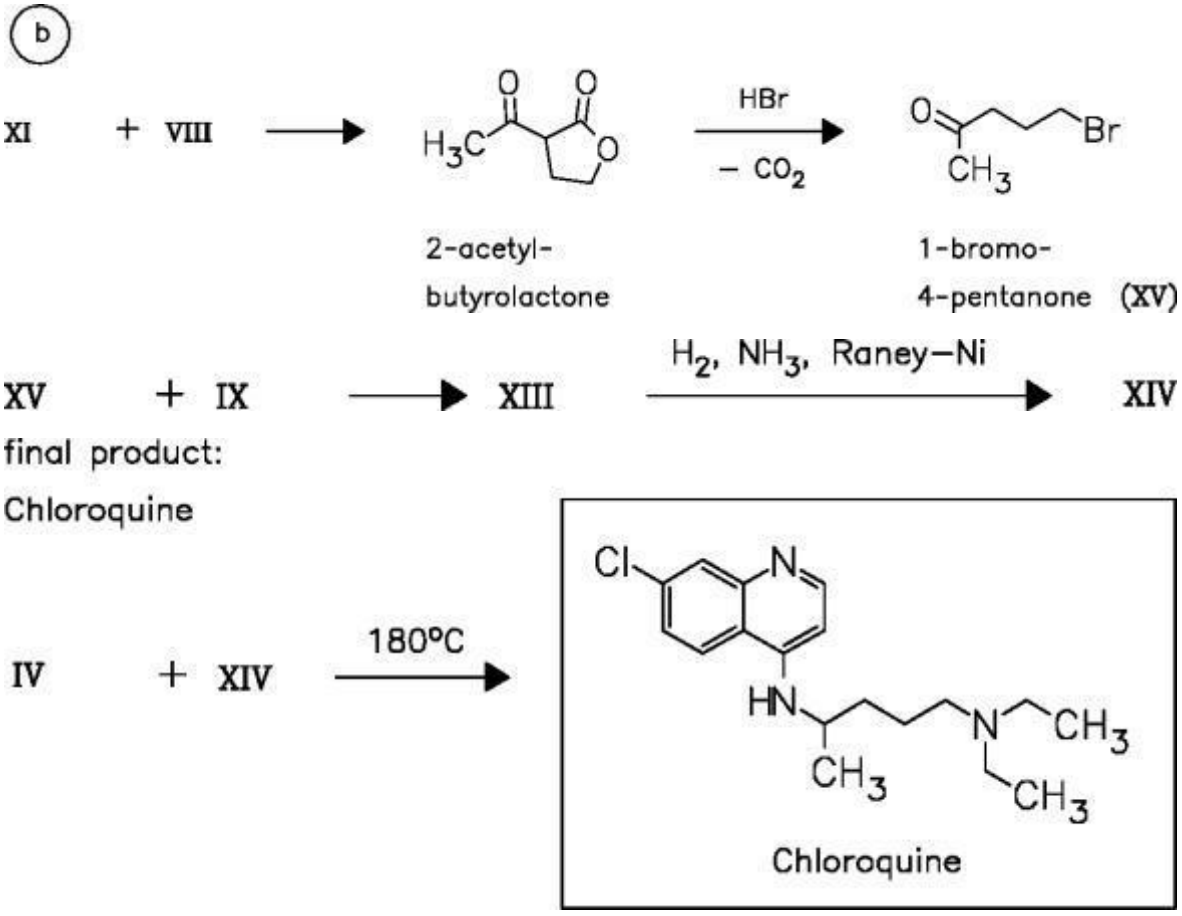
ethyl acetoacetate (XI)

(XII)



1-diethylamino-4-pentanone (XIII)

novoldiamine (XIV)



INT
Intermediate(s) in Substance Preparation

CAS RN	Molecular Formula	Chemical Name
141-97-9	C6H10O3	acetoacetic acid ethyl ester; Butanoic acid, 3-oxo-, ethyl ester (CA Index Name)
517-23-7	C6H8O3	2-acetylbutyrolactone; 2(3H)-Furanone, 3-acetyldihydro- (CA Index Name)
140-80-7	C9H22N2	2-amino-5-diethylaminopentane; 1,4-Pentanediamine, N1,N1-diethyl- (CA Index Name)
3884-71-7	C5H9BrO	1-bromo-4-pentanone; 2-Pentanone, 5-bromo- (CA Index Name)
108-42-9	C6H6ClN	3-chloroaniline; Benzenamine, 3-chloro- (CA Index Name)
86-99-7	C9H6ClNO	7-chloro-4-hydroxyquinoline; 4-Quinolinol, 7-chloro- (CA Index Name)
18000-24-3	C10H6ClNO3	7-chloro-4-hydroxy-2-quinolinecarboxylic acid; 2-Quinolinecarboxylic acid, 7-chloro-4-hydroxy- (CA Index Name)
86-47-5	C10H6ClNO3	7-chloro-4-hydroxy-3-quinolinecarboxylic acid; 3-Quinolinecarboxylic acid, 7-chloro-4-hydroxy- (CA Index Name)
3412-99-5	C14H16ClNO4	(((3-chlorophenyl)amino)methylene)propanedioic acid diethyl ester; Propanedioic acid, (((3-chlorophenyl)amino)methylene)-, diethyl ester (CA Index Name)
	C14H16ClNO4	α-((2-chlorophenyl)imino)butanedioic acid diethyl ester
82673-23-2	C11H12ClNO2	3-((3-chlorophenyl)imino)propanoic acid ethyl ester
86-98-6	C9H5Cl2N	4,7-dichloroquinoline; Quinoline, 4,7-dichloro- (CA Index Name)
109-89-7	C4H11N	diethylamine; Ethanamine, N-ethyl- (CA Index Name)
100-35-6	C6H14ClN	2-diethylaminoethyl chloride; Ethanamine, 2-chlo

		ro-N,N-diethyl- (CA Index Name)
105-14-6	C9H19NO	1-diethylamino-4-pentanone; 2-Pentanone, 5-(diethylamino)- (CA Index Name)
87-13-8	C10H16O5	diethyl ethoxymethylenemalonate; Propanedioic acid, (ethoxymethylene)-, diethyl ester (CA Index Name)
108-56-5	C8H12O5	diethyl oxaloacetate; Butanedioic acid, oxo-, diethyl ester (CA Index Name)
108-01-0	C4H11NO	2-dimethylaminoethanol; Ethanol, 2-(dimethylamino)- (CA Index Name)
87-13-8	C10H16O5	ethoxymethylenemalonic acid diethyl ester; Propanedioic acid, (ethoxymethylene)-, diethyl ester (CA Index Name)
141-97-9	C6H10O3	ethyl acetoacetate; Butanoic acid, 3-oxo-, ethyl ester (CA Index Name)
21640-98-2	C12H10ClNO3	ethyl 5-chloro-4-hydroxy-2-quinolinecarboxylate; 2-Quinolinecarboxylic acid, 5-chloro-4-hydroxy-, ethyl ester (CA Index Name)
21640-97-1	C12H10ClNO3	ethyl 7-chloro-4-hydroxy-2-quinolinecarboxylate; 2-Quinolinecarboxylic acid, 7-chloro-4-hydroxy-, ethyl ester (CA Index Name)
16600-22-9	C12H10ClNO3	ethyl 7-chloro-4-hydroxy-3-quinolinecarboxylate; 3-Quinolinecarboxylic acid, 7-chloro-4-hydroxy-, ethyl ester (CA Index Name)
23999-02-2	C12H23NO3	ethyl 2-(2-diethylaminoethyl)acetoacetate; Butanoic acid, 2-(2-(diethylamino)ethyl)-3-oxo-, ethyl ester (CA Index Name)
75-21-8	C2H4O	ethylene oxide; Oxirane (CA Index Name)
34780-29-5	C5H8O3	ethyl formylacetate; Propanoic acid, 3-oxo-, ethyl ester (CA Index Name)
140-80-7	C9H22N2	novoldiamine; 1,4-Pentanediamine, N1,N1-diethyl- (CA Index Name)

REFERENCE:

US 2 233 970 (Winthrop; 1941; D-prior. 1937).
DRP 683 692 (I. G. Farben; appl. 1937).
DD 53 065 (S. Schwarz et al.; appl. 1966).
c US 2 478 125 (American Cyanamid; 1949; appl. 1944).
2 a DRP 486 079 (I. G. Farben; appl. 1924).
Drake, N.L. et al.: J. Am. Chem. Soc. (JACSAT) 68, 1214 (1946).
1 a Price, C.C.; Roberts, R.M.: J. Am. Chem. Soc. (JACSAT) 68, 1204 (1946).
b Surrey, A.R.; Hammer, H.F.: J. Am. Chem. Soc. (JACSAT) 68, 113 (1946).
2 b Elderfield, R.C. et al.: J. Am. Chem. Soc. (JACSAT) 68, 1579 (1946).
US 2 365 825 (Monsanto; 1944; appl. 1942).
GB 1 157 637 (Sterling Drug; appl. 1966; USA-prior. 1965).
DOS 2 923 472 (Bayer; appl. 9.6.1979).
FR 1 514 280 (Roussel-Uclaf; appl. 10.1.1967).
EP 56 765 (Rhone-Poulenc; appl. 15.1.1982; F-prior. 16.1.1981).
EP 56 766 (Rhone-Poulenc; appl. 15.1.1982; F-prior. 16.1.1981).
DOS 3 112 415 (Dynamit Nobel; appl. 28.3.1