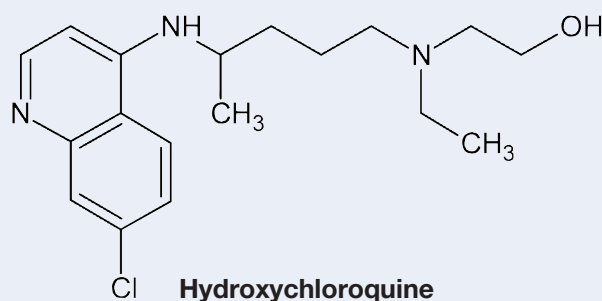
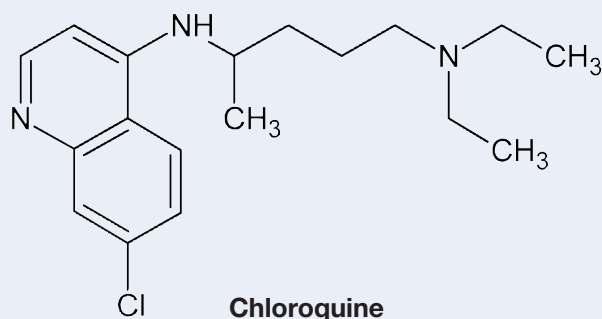


Chiral and achiral Analysis of Chloroquine / Hydroxychloroquine



Product information



YMC CHIRAL
Amylose-SA
YMC-Triart C18

Chiral and achiral Analysis of Chloroquine / Hydroxychloroquine

Date: 12.06.2014

Author: DE

Contents

Introduction	page 3
Chiral Method of Hydroxychloroquine	page 4
Chiral Method of Chloroquine	page 5
Achiral USP Method of Hydroxychloroquine Tablets (Standard Preparation)	page 6
Achiral USP Method of Hydroxychloroquine Tablets (Resolution Solution)	page 7

YMC CHIRAL
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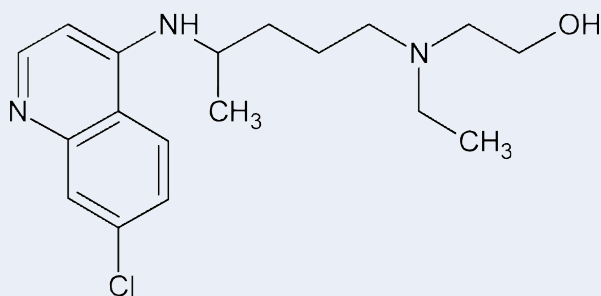
Introduction

Chloroquine and its derivative Hydroxychloroquine are **antimalarial drugs** that are also used in cases of *rheumathoid arthritis* and the autoimmune disease *systemic lupus erythematosus*.

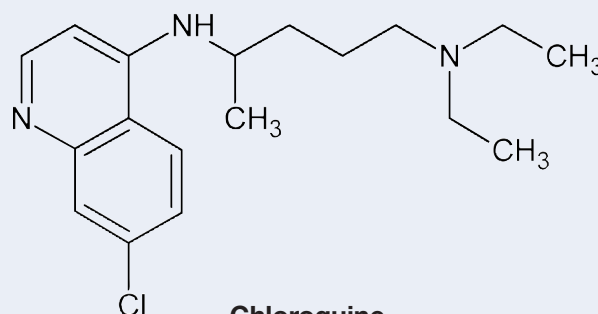
Chloroquine is used for therapy and prophylaxes of *malaria tertiana* and *quartana*, while Hydroxychloroquine is applied against *malaria tropicana*.

Hydroxychloroquine is marketed by **Sanofi** as Quensyl® in Germany and Plaquenil® in Switzerland and other European countries. **Chloroquin** is available as Resochin® (**Bayer Vital**) in Germany and as Nivaquin® (**Sanofi**) in Switzerland.

Both substances have **one stereo centre**, but are applied in their racemic forms.



Hydroxychloroquine



Chloroquine

YMC developed **two chiral methods** using the recently released **immobilised** YMC CHIRAL Amylose-SA to separate the enantiomers of Hydroxychloroquine and Chloroquine respectively. With these methods **high resolution and selectivity** can be obtained offering the possibility of simply scale up of the separation to prep scale.

Product information



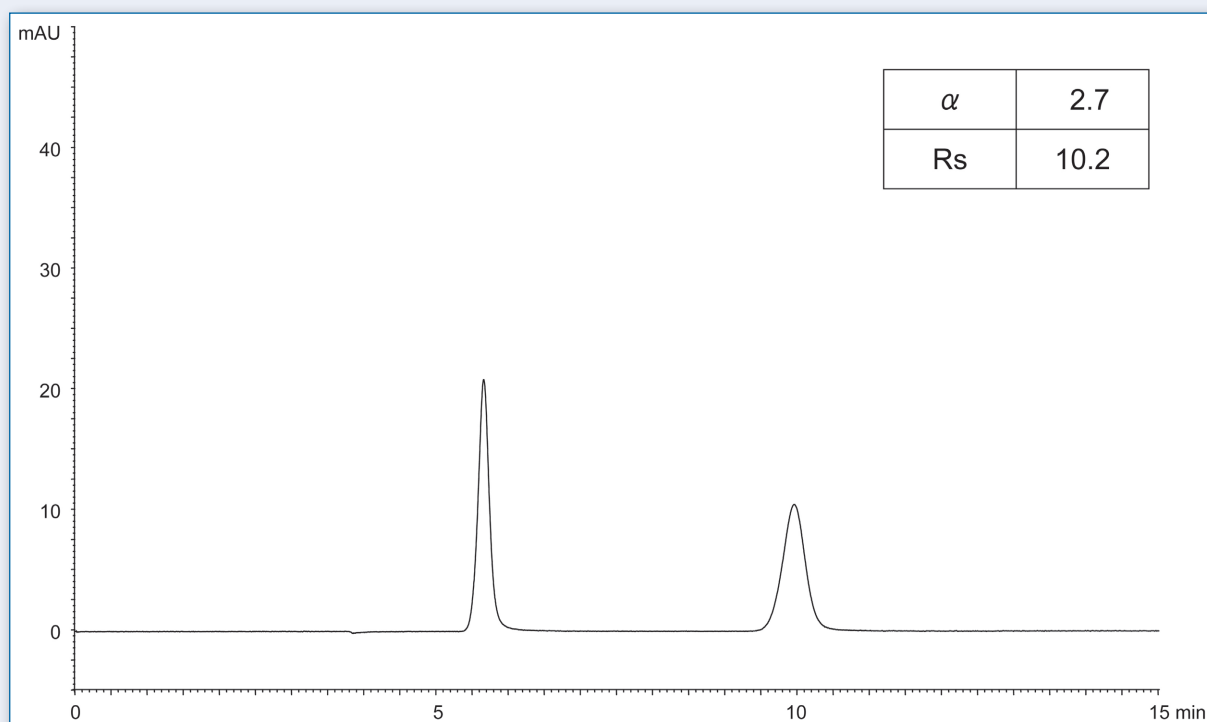
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Chiral Method od Hydroxychloroquine



Column:	YMC CHIRAL Amylose-SA (5 μ m) 250 x 4.6 mm
Part number:	KSA99S05-2546WT
Flow rate:	1.0 mL/min
Eluent:	methyl <i>tert</i> -butyl ether / ethanol / diethylamine (90/10/0.1)
Injection:	5 μ L (100 μ g/mL)
Temperature:	25°C
Detection:	UV at 344 nm

Product information



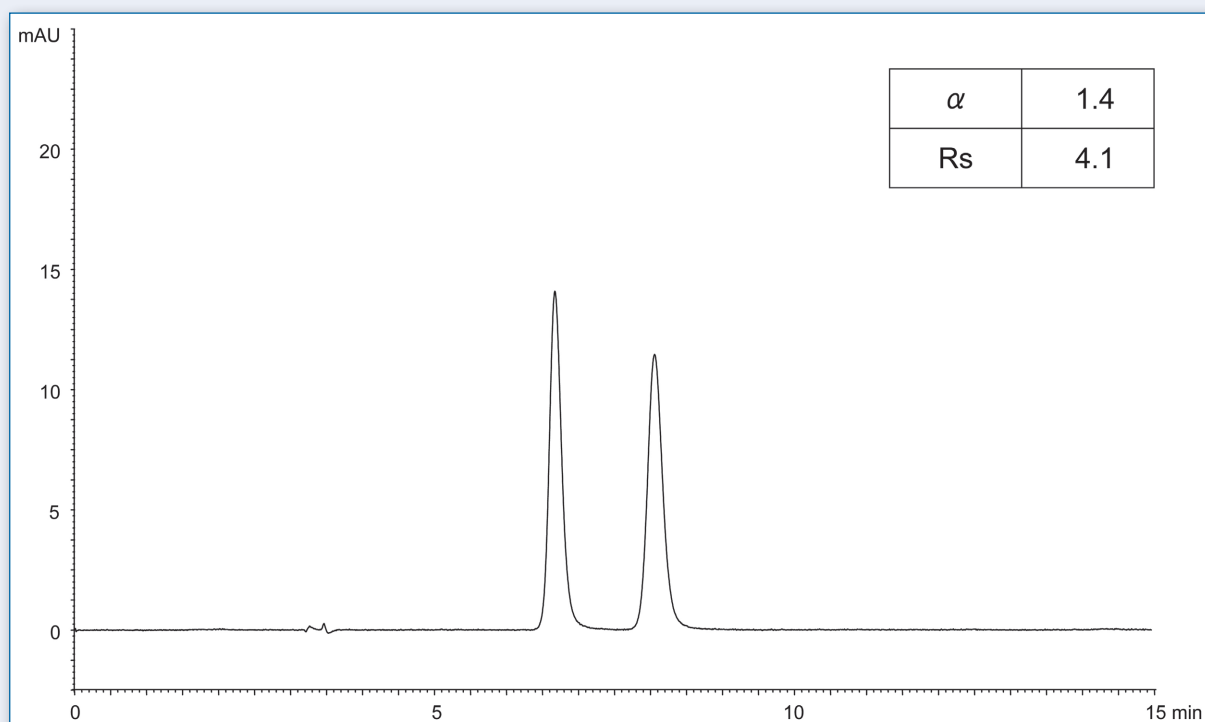
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Chiral and achiral Analysis of Chloroquine / Hydroxychloroquine

Date: 12.06.2014

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Chiral Method of Chloroquine



Column:	YMC CHIRAL Amylose-SA (5 μ m) 250 x 4.6 mm
Part Number:	KSA99S05-2546WT
Flow rate:	1.0 mL/min
Eluent:	methyl <i>tert</i> -butyl ether / ethanol / diethylamine (95/5/0.1)
Injection:	5 μ L (100 μ g/mL)
Temperature:	25°C
Detection:	UV at 344 nm

YMC successfully developed methods for separating the two enantiomers of Hydroxychloroquine and Chloroquine on immobilised YMC CHIRAL Amylose-SA phase with high resolutions of 10.2 and 4.1 respectively.

Product information



YMC CHIRAL
Amylose-SA
YMC-Triart C18

Chiral and achiral Analysis of Chloroquine / Hydroxychloroquine

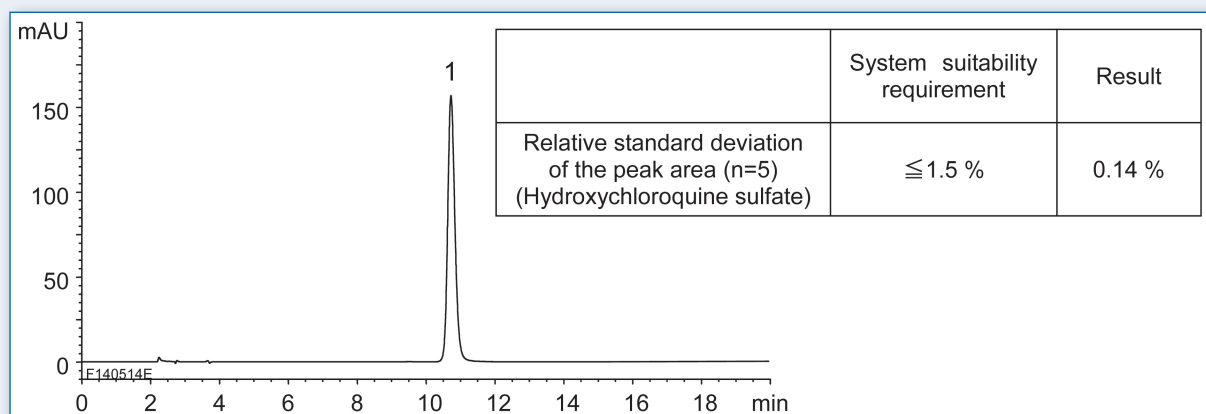
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YMC further used YMC-Triart C18 to analyse Hydroxychloroquine sulfate tablets achirally according to The United States Pharmacopeia 37th (USP)..

Achiral USP Method of Hydroxychloroquine Tablets (Standard Preparation)*

Standard preparation results in a **very low** relative standard deviation of the peak area 0.14%, while the system suitability requirement is much higher ($\leq 1.5\%$).



Column:	YMC-Triart C18 (5 μm , 12 nm) 250 x 4.6 mm
Part Number:	TA12S05-2546WT
Flow rate:	1.0 mL/min
Eluent:	acetonitrile / methanol / water /phosphoric acid (10/10/80/0.2) containing 96 mg/L of sodium 1-pentanesulfonate
Injection:	20 μL (50 $\mu\text{g/mL}$ Hydroxychloroquine sulfate)
Temperature:	25°C
Detection:	UV at 254 nm

Product information



YMC CHIRAL
Amylose-SA
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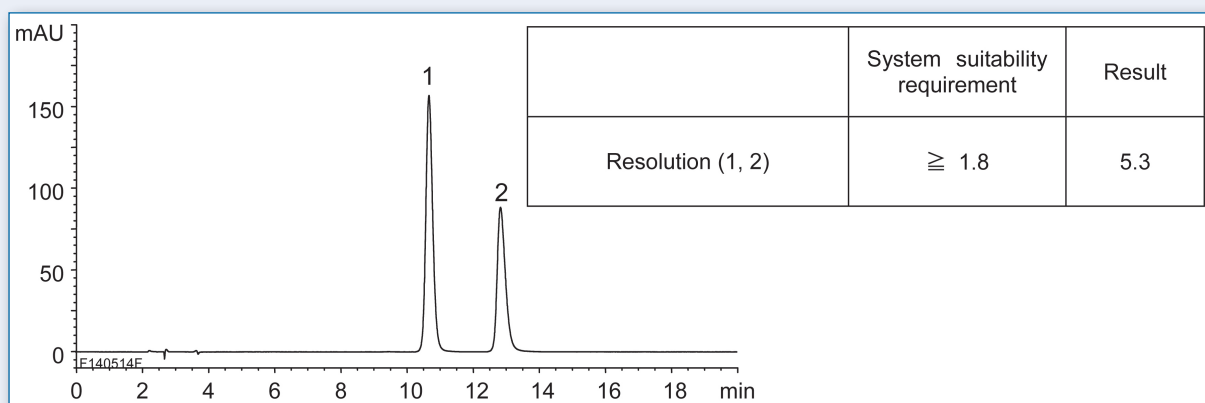
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Achiral USP Method of Hydroxychloroquine Tablets (Resolution Solution)*

The required resolution of ≥ 1.8 between the Hydroxychloroquine peak and Chloroquine peak is also **easily exceeded** by a result of 5.3, which makes YMC-Triart C18 an **ideal choice** for this assay..



Column:	YMC-Triart C18 (5 μ m, 12 nm) 250 x 4.6 mm
Part Number:	TA12S05-2546WT
Flow rate:	1.0 mL/min
Eluent:	acetonitrile / methanol / water /phosphoric acid (10/10/80/0.2) containing 96 mg/L of sodium 1-pentanesulfonate
Injection:	20 μ L (50 μ g/mL Hydroxychloroquine sulfate/Chloroquine phosphate)
Temperature:	25°C
Detection:	UV at 254 nm

* according to The United States Pharmacopeia 37th; Assay

Furthermore, analysis of Hydroxychloroquine sulfate tablets can perfectly be performed using YMC-Triart C18 according to 37th USP. The system suitability requirements are even exceeded.