# 3.2.P.5.3 Validation Report for the Qualitative Determination (Identification) of Quinoline Yellow E 104

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**3.2.P.5.3 Validation Report for the Qualitative Determination (Identification) of Quinoline Yellow E 104**

# 1. Objective

Present the results obtained in the identification test of quinoline yellow E104 in ketosteril tablets.

# 2. Definitions and Abbreviations

UV – Ultra violet spectroscopy

# 3. References

European Pharmacopoeia 8th Edition 2014 (8.1), 2.2.25. – Absorption Spectrophotometry Ultraviolet and Visible
ICH Q2(R1) – Validation of Analytical Procedures: Text and Methodology

# 4. Results

## 4.1. Formula Description

### 4.1.1. Active Substance

Keto acids and hydroxy acids described in the formulation (point 4.A.3)

### 4.1.2. Pharmaceutical Form

Tablets

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## 4.1.3. Formulation

**Table 3.2.P.5.3- 1 Composition of the cores**

| Components | Amount per unit (mg) |
|---|---|
| Alfa-Ketoisoleucine, calcium** | 67,0** |
| Alfa-Ketoleucine, calcium** | 101,0** |
| Alfa-Ketophenylalanine, calcium** | 68,0** |
| Alfa-Ketovaline, calcium** | 86,0** |
| Alfa-Hydroxymethionine, calcium** | 59,0** |
| Isopropyl alcohol* | 101,666 – 108,333<br>0,1295 – 0,138 ml |
| Purified water* | 0,001666 – 0,005 |
| Povidone | 26,3 |
| Macrogol 6000 | 7,8 |
| L-Lysine acetate | 105,0 |
| L-Threonine | 53,0 |
| L-Tryptophan | 23,0 |
| L-Histidine | 38,0 |
| L-Tyrosine | 30,0 |
| Isopropyl alcohol* | 0,0375<br>0,0478 ml |
| Purified water* | 0,0015 |
| Povidone | 16,883 |
| Macrogol 6000 | 5,0 |
| Maize starch*** | Max. 44 |
| Talc | 19,6 |
| Silica colloidal anhydrous | 4,40 |
| Crospovidone | 6,00 |
| Magnesium stearate | 15,0 |
| **Total** | ≈ **775** |

* eliminated during the process;
** the individual water-content is taken into account in order to achieve 100% active ingredient content in each batch;
***varies, as used as filling agent in order to achieve a constant tablet core weight with specified continuous active ingredient content.

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**Table 3.2.P.5.3- 2 Composition of the film-coat**

| Components | Amount per unit (mg) |
|---|---|
| Isopropyl alcohol* | 70<br>89,166 ml |
| Talc | 9,067 |
| Titanium dioxide | 7,40 |
| Macrogol 6000 | 1,2 |
| Purified water* | 1,2 |
| Quinoline yellow E 104 | 0,72 |
| Purified water* | 6 |
| Eudragit E 12,5% m/m** | 47,2 (5,9 solid) |
| Triacetin | 0,43 |
| Macrogol 6000 | 0,28 |
| Purified water* | 0,22 |
| Isopropyl alcohol* | 2,017<br>0,0025688 ml |
| Total | ≈ 25 |

* eliminated during the process;
** part eliminated during the process.

## 4.2. Method

## 4.2.1. Reagents

Aluminium oxide (Sigma-Aldrich, batch: SZBA3410V, validity: May 2016)
Methanol (Fisher Scientific, batch: 1378582, validity: 09 May 2019)
Ammonia 25% (Sigma-Aldrich, batch: SZBD2320V, validity: July 2017)
Purified water
Quinoline yellow E104 reference standard (batch: 101200248, validity: Oct. 2018)
Tartrazine E102 (batch: 140100556, validity: Oct. 2014)
Ketosteril tablets (code: 201295, batch: 18H150601, validity: May 2016)
Ketosteril tablets (code: 201060, batch: 18H163501, validity: May 2016)
Ketosteril tablets (code: 201060, batch: 18H162501, validity: May 2016)

## 4.2.2. Equipment

5120-II-0198: UV Spectrophotometer

## 4.3. Validation Parameter

## 4.3.1. Selectivity

The UV spectrums for the sample solutions and for the quinoline yellow E104 reference solution should be comparable and present a maximum absorption at 390 and 430 nm. The UV spectrum for the tartrazine E102 (compound closely related to the quinoline yellow E104) should not be comparable with the quinoline yellow E104 UV spectrum (a negative result should be obtained).
Three different batches of ketosteril tablets were used.

**Figure 3.2.P.5.3- 1 Quinoline yellow E104 reference UV spectrum, batch: 101200248, validity: Oct. 2018**

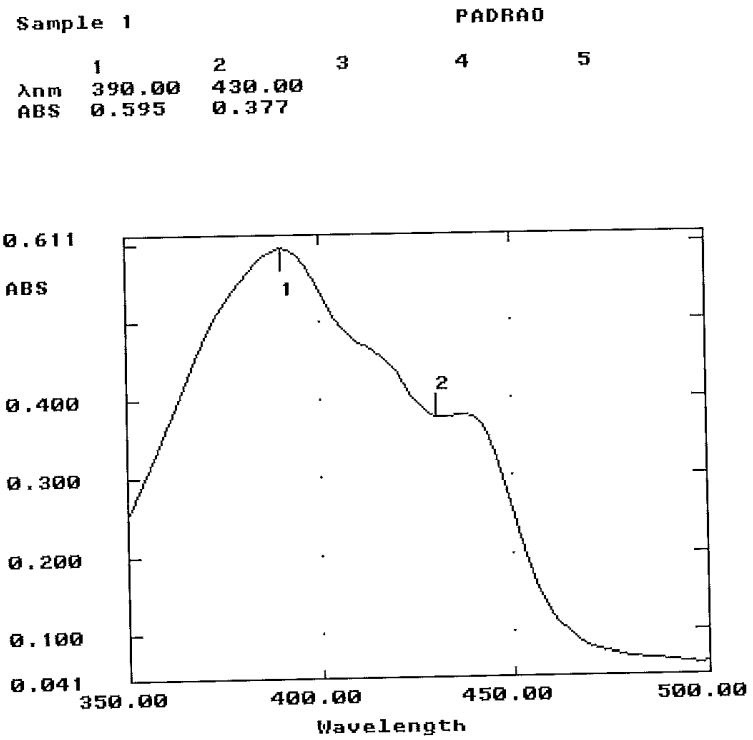

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**Figure 3.2.P.5.3- 2 Ketosteril tablets, batch: 18H150601, validity: May 2016**

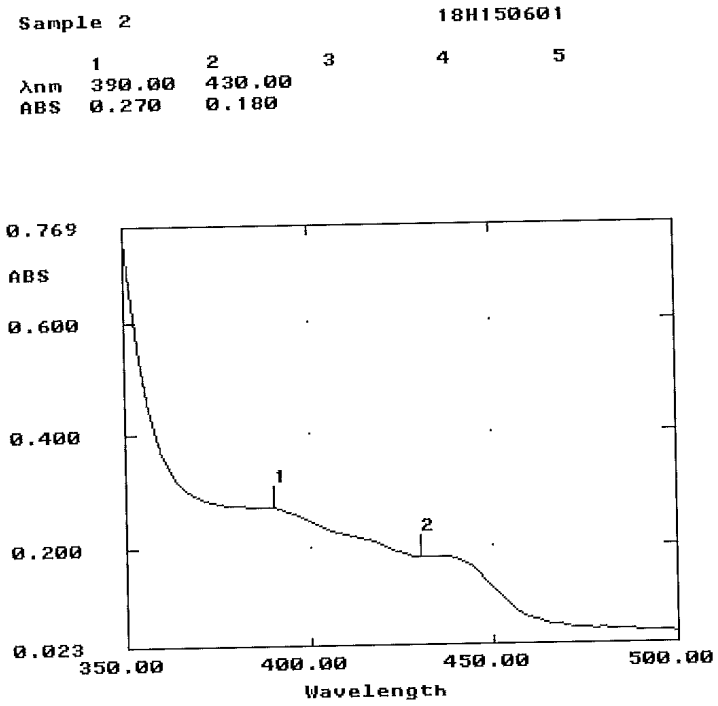


**Figure 3.2.P.5.3- 3 Ketosteril tablets, batch: 18H163501, validity: May 2016**

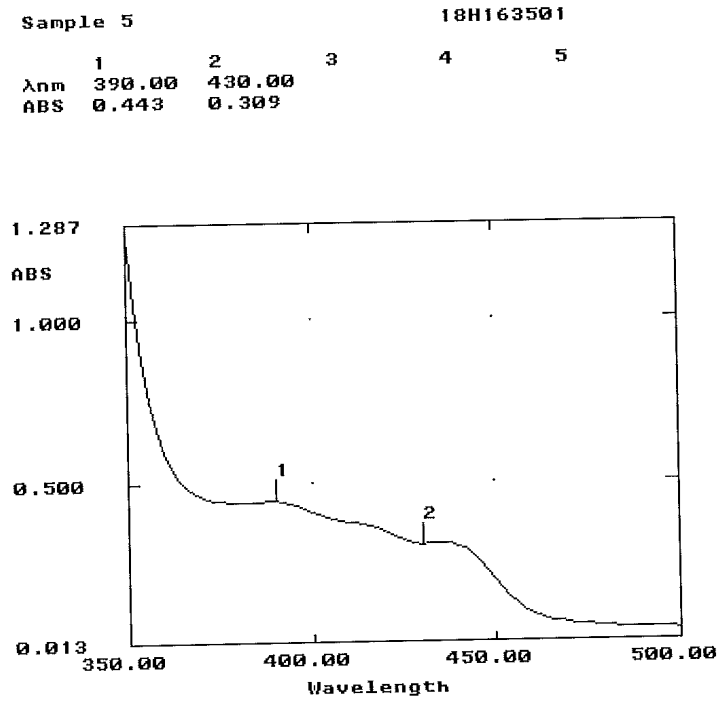

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**Figure 3.2.P.5.3- 4 Ketosteril tablets, batch: 18H162501, validity: May 2016**

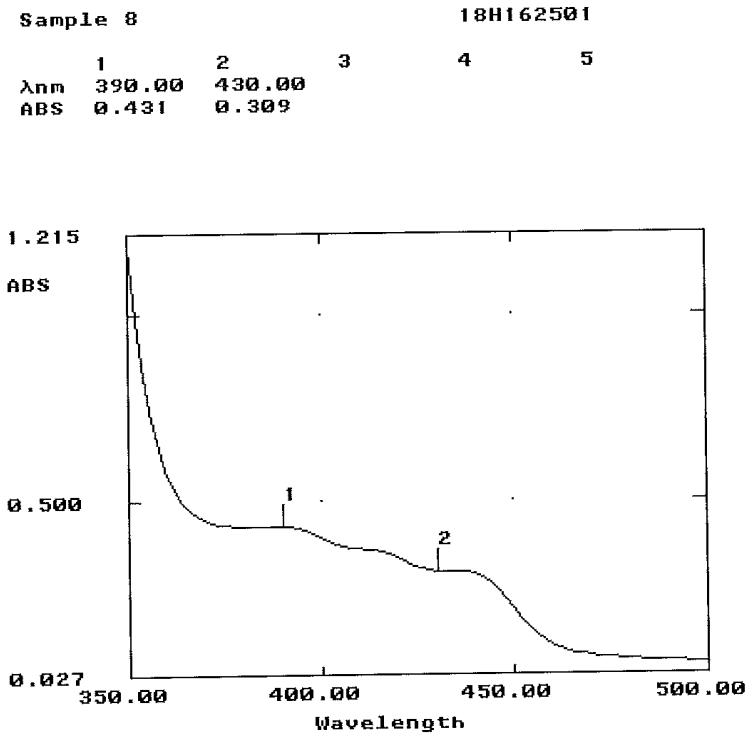
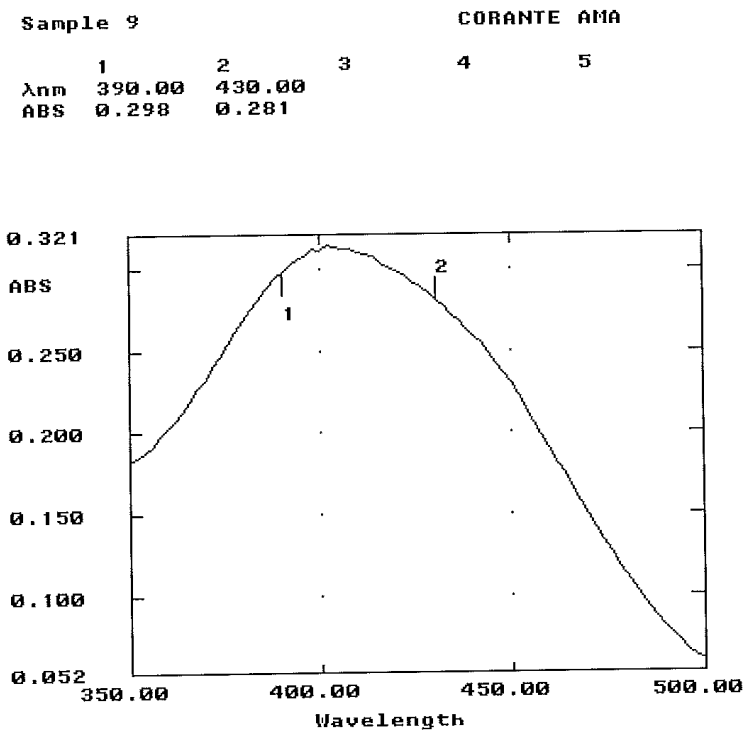



**Figure 3.2.P.5.3- 5 Tartrazine E102, batch: 140100556, validity: Oct. 2014**



## 4.3.2. Results Analysis

The UV spectrums obtained with the sample solutions and the quinoline yellow E104 reference solution are comparable and present a maximum absorption at 390 and 430 nm. The UV spectrum obtained with the tartrazine E102 solution is not comparable with the quinoline yellow E102 reference solution (a negative result was obtained), demonstrating that the identification test is selective for quinoline yellow E104. Therefore, the UV method is considered validated as identification method for quinoline yellow E104 in Ketosteril tablets.