

DIN EN ISO 21676:2022-01 (E)

Water quality - Determination of the dissolved fraction of selected active pharmaceutical ingredients, transformation products and other organic substances in water and treated waste water - Method using high performance liquid chromatography and mass spectrometric detection (HPLC-MS/MS or -HRMS) after direct injection (ISO 21676:2018)

| Contents | Page |
|--|-------------|
| European foreword | 3 |
| Foreword | 4 |
| Introduction | 5 |
| 1 Scope | 6 |
| 2 Normative references | 9 |
| 3 Terms and definitions | 9 |
| 4 Principle | 9 |
| 5 Interferences | 9 |
| 5.1 During sample preparation | 9 |
| 5.2 During high performance liquid chromatography and mass spectrometry | 9 |
| 6 Reagents | 10 |
| 6.1 General | 10 |
| 6.2 Preparation of solutions | 10 |
| 7 Apparatus | 12 |
| 8 Sampling | 13 |
| 9 Procedure | 13 |
| 9.1 General | 13 |
| 9.2 Sample preparation | 13 |
| 9.3 High performance liquid chromatography (HPLC) | 14 |
| 9.4 Detection | 14 |
| 9.4.1 General | 14 |
| 9.4.2 Tandem mass spectrometry (MS/MS) | 15 |
| 9.4.3 High-resolution mass spectrometry (HRMS) | 15 |
| 9.5 Blank value measurements | 15 |
| 10 Calibration | 15 |
| 10.1 General | 15 |
| 10.2 Calibration with external standard | 17 |
| 10.3 Calibration with internal standard | 17 |
| 11 Calculation of recovery | 18 |
| 11.1 General | 18 |
| 11.2 Calculation of analyte recovery using samples | 18 |
| 11.3 Recovery of internal standards | 19 |
| 12 Evaluation | 19 |
| 12.1 Verification of individual substances | 19 |
| 12.2 Calculation of the individual results using calibration with an external standard | 20 |
| 12.3 Calculation of the individual results using calibration with an internal standard | 20 |
| 13 Expression of results | 21 |
| 14 Test report | 21 |

| | |
|---|-----------|
| Annex A (informative) Performance data | 22 |
| Annex B (informative) Examples of recovery | 27 |
| Annex C (informative) Examples of HPLC columns and chromatograms | 29 |
| Annex D (informative) Examples of detection | 35 |
| Annex E (informative) Examples of extension of the method | 38 |
| Bibliography | 39 |