

Supplementary Table S1. Overview of medicines investigated in this study

| No. | Active pharmaceutical ingredient (API) | Dosage form | Total number of samples | Number of different brands | Number of different batches | Number of samples investigated by: | | | | | |
|-----|--|----------------------|-------------------------|----------------------------|-----------------------------|------------------------------------|--|-------------------|-----------------------------------|-------------------------------------|-------------------------------------|
| | | | | | | Assay analysis according to USP 42 | Dissolution analysis according to USP 42 | Visual inspection | Simplified disintegration testing | TLC analysis with visual evaluation | TLC image analysis with TLCyzer app |
| 1 | Atenolol | tablet | 14 | 7 | 12 | 14 | 14 | 14 | 12 | 12 | 12 |
| 2 | Ceftriaxone | powder for injection | 23 | 17 | 22 | 23 | 0 | 23 | 0 | 17 | 17 |
| 3 | Cefuroxime axetil | tablet | 24 | 13 | 18 | 24 | 24 | 24 | 24 | 24 | 24 |
| 4 | Chloroquine | tablet | 16 | 11 | 13 | 16 | 16 | 16 | 16 | 16 | 15 |
| 5 | Ciprofloxacin | tablet | 26 | 23 | 26 | 26 | 25 | 25 | 25 | 25 | 25 |
| 6 | Dexamethasone | tablet | 22 | 13 | 20 | 22 | 22 | 22 | 22 | 22 | 22 |
| 7 | Fluconazole | capsule or tablet | 22 | 11 | 17 | 22 | 15 | 22 | 1 | 0 | 0 |
| 8 | Furosemide | tablet | 14 | 7 | 12 | 14 | 14 | 14 | 14 | 14 | 13 |
| 9 | Glibenclamide | tablet | 19 | 10 | 16 | 19 | 19 | 19 | 19 | 19 | 19 |
| 10 | Hydrochlorothiazide | tablet | 16 | 7 | 14 | 16 | 16 | 16 | 15 | 15 | 15 |
| 11 | Metformin hydrochloride | tablet | 22 | 16 | 22 | 22 | 22 | 22 | 22 | 22 | 21 |
| 12 | Metronidazole | tablet | 25 | 12 | 24 | 25 | 25 | 25 | 25 | 25 | 25 |
| 13 | Cotrimoxazole | tablet | 17 | 13 | 17 | 17 | 17 | 17 | 17 | 17 | 14 |
| | Total | | 260 | 160 | 233 | 260 | 229 | 259 | 212 | 228 | 222 |

All 260 samples were investigated by compendial assay analysis. Ceftriaxone injections were excluded from compendial dissolution testing and from simplified disintegration testing since these tests only apply for solid oral dosage forms. The seven fluconazole samples collected as capsules were excluded from dissolution testing since no dissolution method is described for them in USP. For one ciprofloxacin sample not enough dosage units were available for dissolution testing. Disintegration testing and TLC analysis of the fluconazole samples could not be completed in the time available for this study due to the COVID-19 pandemic and to civil unrest in Nigeria. The same applied to the TLC analysis of six ceftriaxone, two atenolol, one ciprofloxacin and one hydrochlorothiazide sample. Furthermore, in the quantitative evaluation of TLC results by image analysis, one “chloroquine” and three “cotrimoxazole” samples were excluded since they were falsified and did not show spots of the declared API(s) which could have been evaluated; in addition, one sustained-release metformin sample was excluded since it showed incomplete extraction of the API in TLC analysis (see Results section), therefore quantitative evaluation of the TLC spot of this sample by image analysis was not meaningful.