**Supplementary Table 1.** Protocol for quantitative urine sediment analysis by manual microscopy using the standardized KOVA chamber system

|  |  |
| --- | --- |
| Protocol | Details |
| Initial volume | 12 mL |
| Final volume (Average ± SD) | 1.10 a ± 0.05 mL |
| Field size | 3 × 3 mm |
| Total number of small grids | 9 × 9 grids |
| Sediment volume within field area | 0.9 μL |
| Volume per small grid | 0.0111 μL (≒ 0.9 μL/81 grids) |
| Number of small grids per μL | 90 (≒ 1/0.0111 μL) |
| Centrifuge condition | 400 g (1500 rpm), 5 min |

a These values were obtained from experimental data in our laboratory, using 50 random samples, and therefore, the concentration-fold in this study was 10.91.

**Supplementary Table 2.** Cutoff values for qualitative measurement of parameters presented by each manufacturer (unit: /μL)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | NEC | Crystal | Hyaline cast | Pathologic cast | Yeast | Sperm | Mucous thread |
| UF-5000 | 5.6 | 10.0 | 1.0 | 1.0 | 10.0 | 6.0 | a |
| Cobas® u701 | 4.4 | 5.0 | 4.4 | 2.0 | 1.0 | 1.0 | a |
| UAS800 | 2.0 | 6.0 | 2.0 | 1.5 | 3.0 | 12.0 | 264.0 |
| Iris iQ®200SPRINT | 11.1 | 3.3 | 11.1 | 11.1 | 5.6 | 11.1 | 5.6 |
| URiSCAN® PlusScope | 2.0 | 3.0 | 1.0 | 1.0 | 3.0 | a | a |

a In these cases, the manufacturer does not provide a specific cutoff values, but displays it in letters when detecting.

NEC, non-squamous epithelial cell.

**Supplementary Table 3.** Sensitivity, specificity, image review rate, and microscopic review rate of the UF-5000, after applying the various cut-off values (/μL) for pathologic casts

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cut-off values (/μL) | Agreement | Sensitivity | Specificity | PPV | NPV | Image review rate |
| 6.9 | 93.9% | 1.8% | 99.2% | 10.5% | 94.9% | 8.6% |
| 3.0 | 92.0% | 5.5% | 98.6% | 18.8% | 94.8% | 9.0% |
| 1.5 | 93.2% | 10.9% | 97.9% | 22.0% | 95.3% | 9.7% |
| 1.0 a | 92.0% | 23.6% | 95.9% | 23.8% | 95.9% | 12.3% |
| 0.23 | 82.8% | 56.4% | 84.3% | 16.2% | 97.3% | 23.0% |

PPV, positive predictive value; NPV, negative predictive value.

a We used a cut-off value of 1.0/μL for pathologic casts in the UF-5000 in this study.