**Table S1 Three predictive formulas of 24-hour urinary potassium excretion using a single spot urine**

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| --- | --- | --- | --- | --- |
| **Original**  **research** | **Population** | **Age range（year）** | **Type of single spot urine**\* | **Predictive equation for 24-h K excretion(mg/d)†** |
| Kawasaki(9)  | Japan | 20-79 | SMU | 39×7.20×[Kspot(mmo/L)/Crspot(mg/L) ×PrUCr24 h (mg/d)]0.5**Male**:PrUCr24h(mg/d)=15.12×weight(kg)+7.39×height(cm)12.63×age(year)-79.90;**Female**:PrUCr24h(mg/d)=8.58×weight(kg)+5.09×height(cm)-4.72×age(year)-74.95; |
| Tanaka(10) | Japan | 20-59 | RSU | 39×7.59×[Kspot (mmo/L)/Crspot (mg/L) ×PrUCr24 h (mg/d)]0.43PrUCr24h(mg/d)=14.89×weight(kg)+16.14×height(cm)-2.04×age(year)-2244.45 |
| Mage(11) | Theoretic equation | NA | RSU | 39×Kspot (mmo/L)/Crspot (mg/L) ×PrUCr24 h (mg/d)**Male**: PrUCr24h(mg/d) =0.00179×[140-age(year)]×[weight(kg)1.5×height(cm)0.5] ×[1+0.18×A] ×[1.366-0.0159×BMI(kg/m2)];**Female**:PrUCr24h(mg/d)=0.00163×[140-age(year)] ×[weight(kg)1.5×height(cm)0.5] ×[1+0.18×A] ×[1.429-0.0198×BMI(kg/m2)];Where A is 1 for African American or black race and 0 for other races |

\*: RSU, random spot urine; SMU, second morning urine

 †: Kspot (mmol/L) and Crspot (mg/L) are concentration of potassium, and creatinine in spot urine specimens, where Crspot (mg/L)= Crspot (μmol/L) /1000×113.1;

PrUCr24 h (mg/d) is the estimation of 24-hour creatinine excretion.

**Table S2. The normality test and paired Wilcoxon test for the mean difference for predicted and measured 24UKV of three formulas**

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| --- | --- | --- |
| 　 | **Mesasured****(n=129)** | **Formulas** |
| 　 | **Kawasaki**(9) **(n=94)** ‡  | **Tanaka** (10) **(n=117)** § | **Mage**(11) **(n=129)** |
| 24 UKV, mean±SD (mg/d) \* | 1193.3±547.9 | 2426.2±587.0 | 1217.4±458.6 | 1423.6±1010.9 |
| Mean of Absolute Difference, mean±SD, (mg/d) | Reference | 1215.6±591.2 | -14.9±486.4 | 230.3±821.0 |
| 95%CI(mg/d) | Reference | （1096.1,1335.1) † |  (-103,73.3) | (88.6,372.0) † |
| Shapiro-Wilk *W* statistic | Reference | 0.99 | 0.97 | 0.94 |
| P-values of Shapiro-Wilk test | Reference | 0.99 | 0.01 | <0.0001 |
| Signed Rank | Reference | 2225.5 | 94.5 | 1095.5 |
| P-values of paired Wilcoxon test | Reference | <.0001  | 0.8 | 0.01 |
| paired *t* test | Reference | 19.9 | — | — |
| P-values of paired *t* test | Reference | <.0001  | — | — |

\*:24UKV, 24-hour urinary potassium excretion; SD: standard deviation

†: Significantly different from the measured 24-h potassium excretion, 2-sided P value <0.05 from paired Wilcoxon test.

‡: A total of 94 second morning urine (SMU) samples were analyzed for Kawasaki formula, because 35 participants, without SMU samples, did not void in the required time duration of Kawasaki’ equation. Among these 94 SMU samples, 84 samples were analyzed for Tanaka formula, because the negative bases (10 cases) occurred in the computation procession so that the estimation cannot be computed.

§: A total of 117 randomized spot urine (RSU) samples were analyzed for Tanaka formula, because the negative bases (12 cases) occurred in the computation procession so that the estimation cannot be computed.

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| **Table S3 Means and standard deviations of measured and predicted 24-h urinary potassium excretion by timing of spot urine collection within sex**

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| --- | --- | --- |
|  | **Measured 24UKV\*** | **Predicted 24UKV** |
| **n** | **Measured 24UKV**†**(mg/d)** | **Kawasaki**[9] ‡ |  | **Tanaka**[10] § |  | **Mage**[11] |
| **n** | **Predicted 24UKV****(mg/d)** | **Mean of Absolute Difference****(mg/d)** |  | **n** | **Predicted 24UKV****(mg/d)** | **Mean of Absolute Difference****(mg/d)** |  | **n** | **Predicted 24UKV****(mg/d)** | **Mean of Absolute Difference****(mg/d)** |
| **ALL** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| morning**‡** | 94 | 1210.7±521.1 | 94 | 2426.2±587.0 | 1215.6±591.2† |  | 84 | 1288.5±462.4 | 13.0±471.6 |  | 94 | 1647.7±1068.9 | 437.1±885.1¶ |
| afternoon | 124 | 1198.4±547.4 |  | NA|| | NA |  | 113 | 1277.2±469.3 | 44.05±551.02 |  | 124 | 1553.9±930.0 | 355.5±825.3¶ |
| evening | 122 | 1187.6±530.9 |  | NA | NA |  | 110 | 1199.7±454.9 | -28.8±449.2 |  | 122 | 1361.1±931.8 | 173.5±717.9¶ |
| overnight | 125 | 1192.4±537.0 |  | NA | NA |  | 113 | 979.2±377.8 | -253.4±494.5¶ |  | 125 | 857.9±639.3 | -334.5±613.5¶ |
| **Male** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| morning | 54 | 1294.2±549.8 | 54 | 2640.6±617.8 | 1346.4±622.1† |  | 51 | 1325.0±499.0 | 5.3±483.5 |  | 54 | 1865.5±1231.4 | 571.3±1003.0¶ |
| afternoon | 74 | 1304.9±588.8 |  | NA | NA |  | 69 | 1297.3±469.8 | -20.0±540.9 |  | 74 | 1652.7±923.6 | 347.7±772.3¶ |
| evening | 69 | 1289.3±565.2 |  | NA | NA |  | 64 | 1245.2±493.2 | -56.1±470.4 |  | 69 | 1559.1±1053.9 | 269.8±831.2¶ |
| overnight | 72 | 1289.0±577.7 |  | NA | NA |  | 67 | 1027.9±412.1 | -272.5±526.5¶ |  | 72 | 1006.9±745.1 | -282.1±708.2¶ |
| **Female** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| morning | 40 | 1097.9±462.8 | 40 | 2136.9±391.8 | 1039.0±501.9† |  | 33 | 1232.0±400.2 | 24.9±459.9 |  | 40 | 1353.8±713.8 | 255.9±665.1¶ |
| afternoon | 50 | 1040.8±439.6 |  | NA | NA |  | 44 | 1245.7±472.3 | 144.5±557.9 |  | 50 | 1407.8±929.3 | 367.1±906.0¶ |
| evening | 53 | 1055.3±454.4 |  | NA | NA |  | 46 | 1136.4±392.0 | 9.2±420.0 |  | 53 | 1103.2±669.5 | 48.0±517.0¶ |
| overnight | 53 | 1061.2±448.7 | 　 | NA | NA | 　 | 46 | 908.3±312.3 | -225.6±448.1¶ | 　 | 53 | 655.5±379.9 | -405.7±451.5¶ |

\*:24UKV, 24-hour urinary potassium excretion; The timing of the spot urine samples was categorized as: morning (the second void after rising in the morning, 08:30-12:30), afternoon (12:31-17:30), evening (17:31-23:59), overnight (the first void after the longest period of sleep, 04:00-12:00).†: Since not all participants had a urine sample at every period, the mean measured 24UKV slightly differed within each sex group because only participants with a urine sample during the same period were included.‡: A total of 94 second morning urine (SMU) samples were analyzed for Kawasaki formula, because 35 participants, without SMU samples, did not void in the required time duration of Kawasaki’ equation. Among these 94 SMU samples, 84 samples were analyzed for Tanaka formula, because the negative bases (10 cases) occurred in the computation procession so that the estimation cannot be computed.§: A total of 117 randomized spot urine (RSU) samples were analyzed for Tanaka formula, because the negative bases (12 cases) occurred in the computation procession so that the estimation cannot be computed.||: NA, not applicable. ¶: Significantly different from the measured 24-h potassium excretion, 2-sided P value <0.05 from paired Wilcoxon test. |



**Figure S1：Scatter plots between measured 24-h urinary potassium excretion and estimated values by Kawasaki, Tanaka, and Mage formulas**

A: Kawasaki formula with second morning spot urine specimen. B: Tanaka formula with casual spot urine specimen. C: Mage formula with casual spot urine specimen. The solid line was the linear fitting line between measured and estimated values. The dashed line was the line of unity.