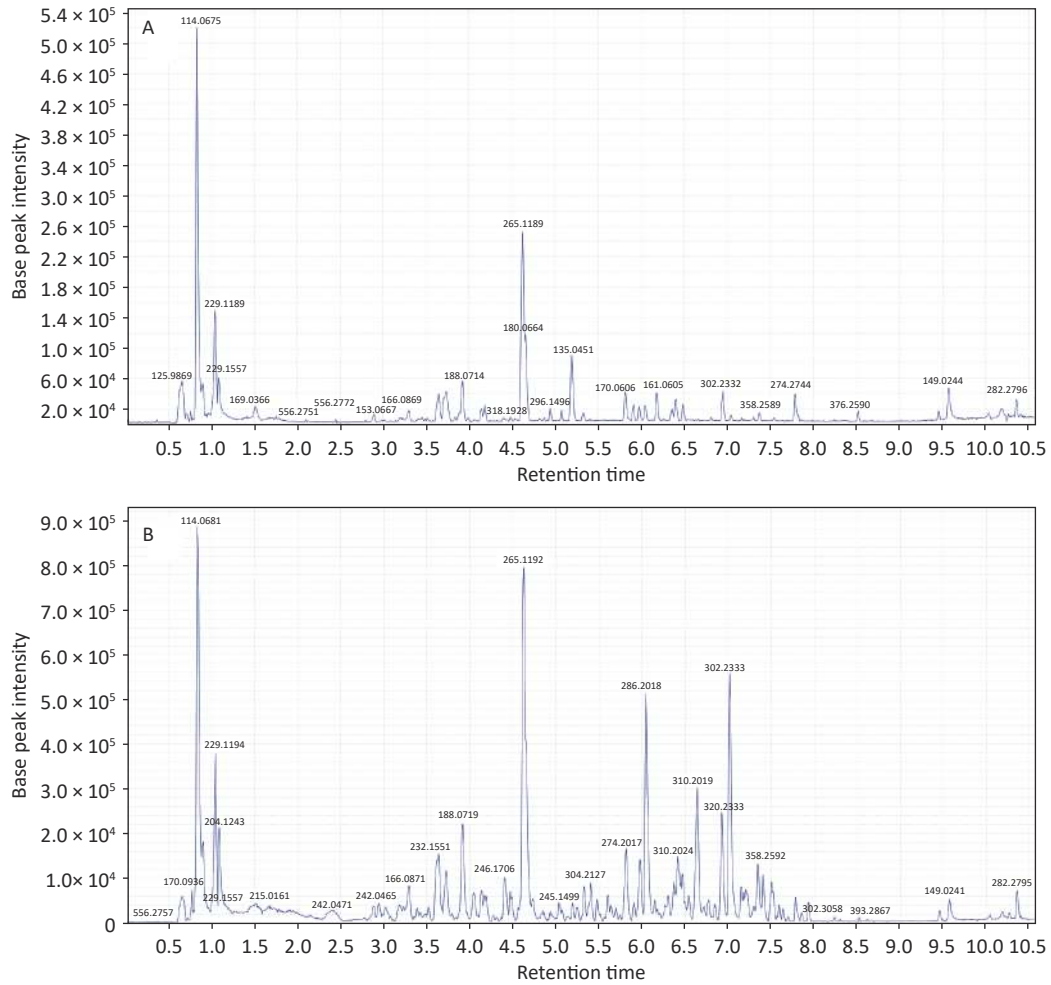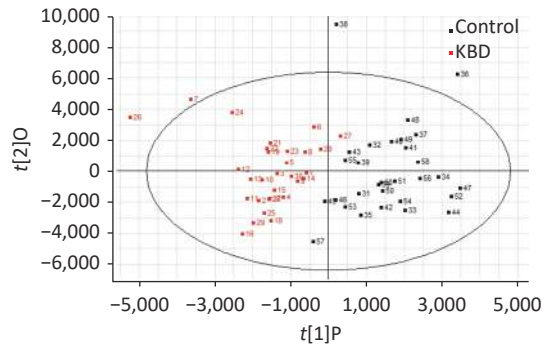**Supplementary Table S1.** General conditions of the female KBD patients and controls
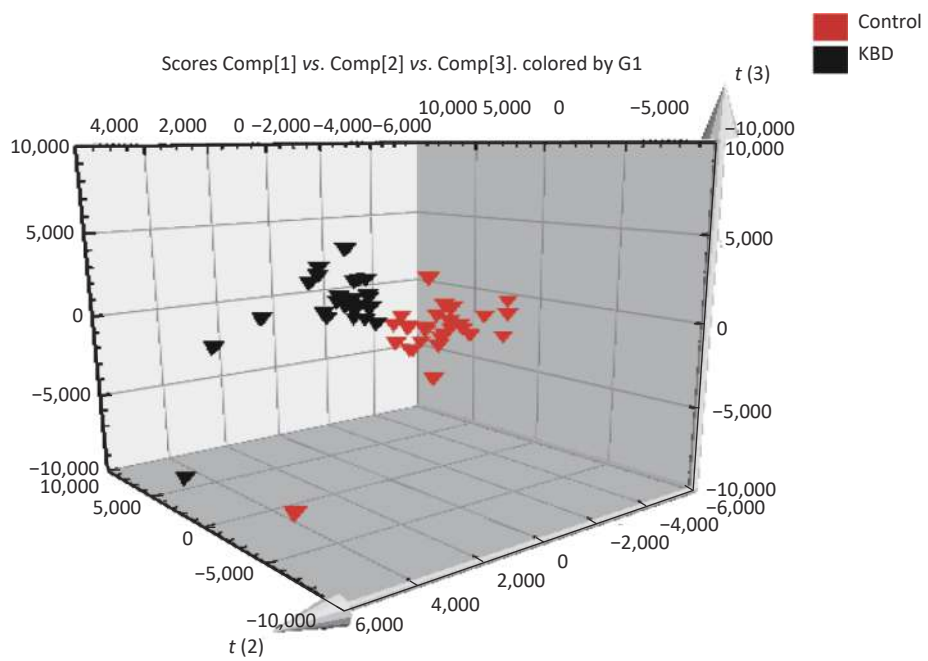
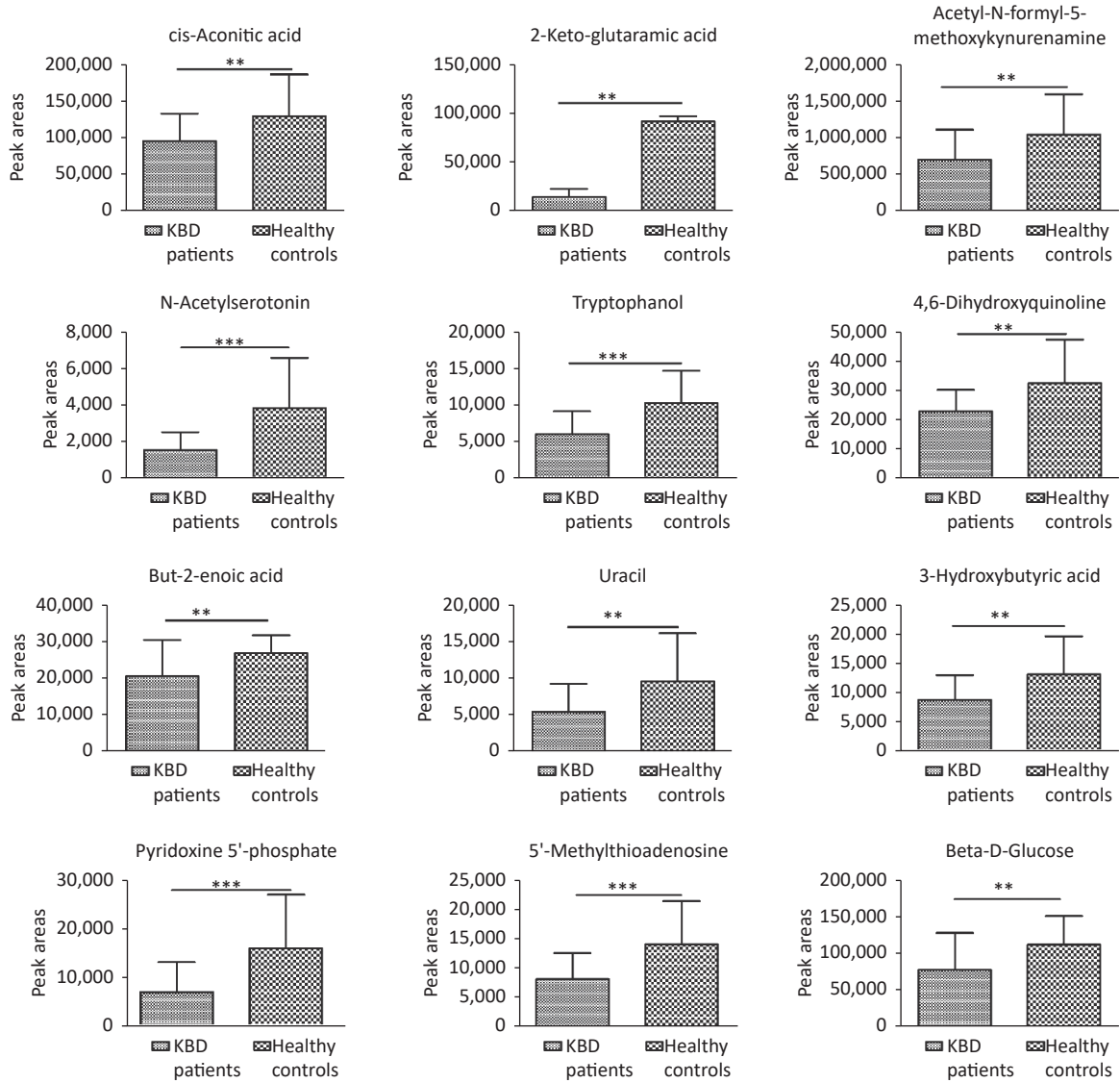| Group | Number | Age mean (years) | Heights (cm) | Weights (kg) | BMI |
|---|---|---|---|---|---|
| KBD patients | 30 | 47.57 ± 9.97 | 157.45 ± 6.04 | 57.14 ± 7.24 | 23.07 ± 3.16 |
| Controls | 30 | 47.27 ± 13.06 | 158.76 ± 7.15 | 58.26 ± 8.64 | 23.08 ± 3.07 |
| t | | 0.099 | 0.754 | 0.541 | 0.007 |
| P | | 0.921 | 0.454 | 0.592 | 0.994 |



**Supplementary Figure S1.** The total ionization graph between patients and controls in the negative ESI mode. (A) KBD; (B) control. ESI: electrospray ionization; KBD, Kashin-Beck disease.

**Supplementary Figure S2.** PCA score plot of urinary metabolites.



**Supplementary Figure S3.** PLS-DA score plot of urinary metabolites.

**Supplementary Figure S4.** Comparison of 12 different metabolites in the urine sample of the two groups. [**]$P < 0.01$; [***]$P < 0.001$.