

Table 2. The effects of different combination treatments of anastrozole and finasteride on sex hormones and PSA in rats with testosterone induced BPH and naturally aging BPH at different periods (n=264).

| Groups and parameters                     |                                                                  | Age of rat           | 8W          | 12W          | 20W          | 28W          | 36W          | 44W           | 52W          | 60W          | 68W          | 76W          | 84W          |
|-------------------------------------------|------------------------------------------------------------------|----------------------|-------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|
|                                           |                                                                  | Time of intervention | 0W          | 4W           | 12W          | 20W          | 28W          | 36W           | 44W          | 52W          | 60W          | 68W          | 76W          |
| Testosterone induced BPH group (n=132)    | Anastrozole treatment subgroup (BPH-A, n=33)                     | tT (nmol/l)          | 2.52±0.01   | 2.93±0.03    | 3.24±0.06    | 3.30±0.06    | 3.31±0.06    | 3.37±0.06     | 3.39±0.05    | 3.36±0.03    | 3.36±0.02    | 3.35±0.03    | 3.31±0.04    |
|                                           |                                                                  | fT (nmol/l)          | 1.14±0.01   | 1.43±0.02    | 1.48±0.04    | 1.50±0.03    | 1.52±0.03    | 1.57±0.06     | 1.60±0.04    | 1.63±0.02    | 1.68±0.04    | 1.67±0.05    | 1.63±0.06    |
|                                           |                                                                  | E2 (pmol/l)          | 0.38±0.01   | 0.36±0.03    | 0.31±0.03    | 0.27±0.02    | 0.25±0.01    | 0.26±0.02     | 0.31±0.03    | 0.32±0.01    | 0.38±0.02    | 0.38±0.01    | 0.39±0.02    |
|                                           |                                                                  | DTH (pg/ml)          | 177.18±1.51 | 202.57±21.58 | 320.08±41.15 | 379.10±47.21 | 378.55±35.50 | 449.74±117.11 | 491.45±80.23 | 489.18±59.12 | 474.47±19.13 | 511.36±19.08 | 573.54±48.59 |
|                                           |                                                                  | SHBG (nmol/l)        | 84.58±1.81  | 89.90±6.01   | 103.15±2.01  | 107.90±3.12  | 121.62±4.75  | 129.31±3.83   | 141.34±12.59 | 147.38±13.51 | 156.53±9.93  | 157.72±6.42  | 158.96±3.29  |
|                                           |                                                                  | PSA (ng/ml)          | 0.49±0.01   | 1.36±0.12    | 1.35±0.09    | 1.80±0.12    | 1.84±0.61    | 1.94±0.29     | 1.91±0.45    | 1.78±0.45    | 2.09±0.83    | 2.13±0.87    | 2.18±0.85    |
|                                           | Finasteride treatment subgroup (BPH-F, n=33)                     | T/E (nmol/pmol)      | 6.63±0.15   | 8.09±0.61    | 10.41±0.87   | 11.81±0.57   | 11.98±0.42   | 12.20±0.91    | 10.88±0.94   | 10.50±0.25   | 8.93±0.33    | 8.81±0.27    | 8.50±0.35    |
|                                           |                                                                  | tT (nmol/l)          | 2.52±0.01   | 2.93±0.04    | 3.21±0.05    | 3.26±0.02    | 3.29±0.12    | 3.29±0.05     | 3.33±0.01    | 3.27±0.06    | 3.29±0.06    | 3.29±0.05    | 3.28±0.03    |
|                                           |                                                                  | fT (nmol/l)          | 1.14±0.01   | 1.42±0.01    | 1.45±0.03    | 1.48±0.04    | 1.53±0.02    | 1.54±0.03     | 1.57±0.05    | 1.61±0.03    | 1.66±0.06    | 1.64±0.03    | 1.62±0.02    |
|                                           |                                                                  | E2 (pmol/l)          | 0.38±0.01   | 0.38±0.01    | 0.37±0.02    | 0.37±0.02    | 0.40±0.01    | 0.44±0.03     | 0.46±0.02    | 0.49±0.02    | 0.49±0.03    | 0.49±0.04    | 0.49±0.03    |
|                                           |                                                                  | DTH (pg/ml)          | 176.09±3.29 | 217.06±49.72 | 248.37±25.08 | 241.71±14.62 | 228.93±21.26 | 266.90±28.10  | 285.80±73.65 | 331.38±17.00 | 338.77±5.73  | 343.20±16.58 | 343.10±18.33 |
|                                           |                                                                  | SHBG (nmol/l)        | 84.70±2.41  | 92.52±6.12   | 98.81±4.92   | 114.34±9.80  | 121.60±11.80 | 135.56±10.87  | 148.57±23.22 | 153.26±15.27 | 170.01±13.10 | 177.49±11.35 | 177.16±11.90 |
|                                           | Anastrozole + Finasteride treatment subgroup (BPH-A+F, n=33)     | PSA (ng/ml)          | 0.48±0.01   | 1.27±0.07    | 0.74±0.02    | 0.69±0.06    | 0.57±0.02    | 0.63±0.14     | 0.88±0.04    | 1.30±0.04    | 1.92±0.54    | 1.96±0.55    | 1.95±0.55    |
|                                           |                                                                  | T/E (nmol/pmol)      | 6.58±0.10   | 7.64±0.10    | 8.61±0.45    | 8.91±0.36    | 8.18±0.46    | 7.48±0.38     | 7.19±0.23    | 6.63±0.24    | 6.68±0.45    | 6.68±0.46    | 6.65±0.35    |
|                                           |                                                                  | tT (nmol/l)          | 2.52±0.01   | 2.94±0.03    | 3.33±0.02    | 3.35±0.03    | 3.36±0.02    | 3.41±0.07     | 3.45±0.01    | 3.47±0.06    | 3.47±0.03    | 3.42±0.02    | 3.43±0.02    |
|                                           |                                                                  | fT (nmol/l)          | 1.14±0.01   | 1.43±0.02    | 1.51±0.02    | 1.55±0.02    | 1.60±0.03    | 1.61±0.03     | 1.64±0.04    | 1.72±0.01    | 1.75±0.03    | 1.75±0.03    | 1.73±0.04    |
|                                           |                                                                  | E2 (pmol/l)          | 0.37±0.01   | 0.34±0.02    | 0.32±0.01    | 0.26±0.01    | 0.25±0.01    | 0.23±0.01     | 0.22±0.01    | 0.21±0.01    | 0.20±0.01    | 0.19±0.01    | 0.19±0.01    |
|                                           |                                                                  | DTH (pg/ml)          | 178.03±1.48 | 211.62±54.05 | 187.18±45.01 | 170.57±28.41 | 173.16±35.34 | 173.87±28.14  | 161.62±29.77 | 152.40±5.04  | 148.37±7.37  | 148.41±8.79  | 145.87±13.61 |
|                                           | Placebo treatment subgroup (BPH-P, n=33)                         | SHBG (nmol/l)        | 85.67±1.25  | 98.00±4.30   | 108.49±3.49  | 127.24±7.82  | 136.92±22.26 | 149.91±15.16  | 169.27±22.48 | 169.76±4.17  | 184.83±17.41 | 189.50±21.62 | 191.46±21.41 |
|                                           |                                                                  | PSA (ng/ml)          | 0.48±0.01   | 1.35±0.11    | 0.64±0.09    | 0.37±0.04    | 0.29±0.07    | 0.22±0.06     | 0.15±0.02    | 0.15±0.10    | 0.10±0.02    | 0.13±0.02    | 0.17±0.04    |
|                                           |                                                                  | T/E (nmol/pmol)      | 6.76±0.09   | 9.72±1.30    | 12.48±0.29   | 13.06±0.37   | 13.64±0.66   | 14.84±0.91    | 15.70±0.64   | 16.54±0.58   | 17.65±0.60   | 17.72±0.45   | 18.07±0.94   |
|                                           |                                                                  | tT (nmol/l)          | 2.52±0.01   | 2.93±0.01    | 3.07±0.05    | 3.19±0.02    | 3.20±0.03    | 3.20±0.03     | 3.22±0.02    | 3.25±0.02    | 3.24±0.02    | 3.24±0.02    | 3.23±0.01    |
|                                           |                                                                  | fT (nmol/l)          | 1.13±0.01   | 1.38±0.01    | 1.41±0.01    | 1.43±0.01    | 1.46±0.02    | 1.47±0.03     | 1.51±0.03    | 1.58±0.04    | 1.60±0.03    | 1.60±0.04    | 1.60±0.05    |
|                                           |                                                                  | E2 (pmol/l)          | 0.37±0.01   | 0.40±0.02    | 0.45±0.01    | 0.49±0.02    | 0.54±0.02    | 0.57±0.01     | 0.60±0.03    | 0.62±0.01    | 0.64±0.02    | 0.70±0.04    | 0.72±0.03    |
| Naturally aging BPH control group (n=132) | Anastrozole treatment subgroup (Control-A, n=33)                 | DTH (pg/ml)          | 177.38±1.04 | 230.23±39.93 | 385.80±59.08 | 434.71±14.23 | 448.99±35.23 | 461.96±34.95  | 512.47±8.60  | 545.29±23.40 | 552.47±17.26 | 605.14±31.84 | 603.94±33.93 |
|                                           |                                                                  | SHBG (nmol/l)        | 85.63±0.88  | 89.81±6.94   | 98.84±2.82   | 102.64±1.30  | 114.08±0.72  | 122.79±1.17   | 139.00±11.57 | 142.66±5.38  | 152.95±6.87  | 154.98±5.09  | 156.20±4.59  |
|                                           |                                                                  | PSA (ng/ml)          | 0.48±0.01   | 1.40±0.03    | 1.81±0.11    | 2.18±0.08    | 2.50±1.13    | 2.82±0.65     | 2.86±0.76    | 2.71±0.36    | 2.79±0.33    | 2.76±0.55    | 2.72±0.51    |
|                                           |                                                                  | T/E (nmol/pmol)      | 6.76±0.11   | 7.34±0.30    | 6.82±0.20    | 6.47±0.22    | 5.96±0.15    | 5.59±0.01     | 5.38±0.26    | 5.25±0.11    | 5.05±0.11    | 4.58±0.41    | 4.14±0.02    |
|                                           |                                                                  | tT (nmol/l)          | 2.52±0.01   | 2.75±0.05    | 2.87±0.01    | 2.84±0.03    | 2.82±0.01    | 2.77±0.01     | 2.76±0.03    | 2.72±0.02    | 2.72±0.18    | 2.72±0.24    | 2.67±0.16    |
|                                           |                                                                  | fT (nmol/l)          | 1.14±0.02   | 1.22±0.01    | 1.29±0.03    | 1.35±0.04    | 1.41±0.01    | 1.41±0.04     | 1.36±0.02    | 1.33±0.01    | 1.31±0.02    | 1.29±0.03    | 1.26±0.03    |
|                                           | Finasteride treatment subgroup (Control-F, n=33)                 | E2 (pmol/l)          | 0.37±0.01   | 0.36±0.01    | 0.31±0.03    | 0.28±0.02    | 0.28±0.01    | 0.28±0.02     | 0.32±0.03    | 0.36±0.04    | 0.41±0.02    | 0.43±0.01    | 0.44±0.02    |
|                                           |                                                                  | DTH (pg/ml)          | 176.61±2.09 | 182.59±2.98  | 283.17±5.33  | 282.31±6.17  | 302.42±36.24 | 339.46±30.99  | 405.67±69.91 | 442.66±15.13 | 533.95±58.58 | 576.94±44.29 | 517.07±19.45 |
|                                           |                                                                  | SHBG (nmol/l)        | 85.22±0.44  | 88.03±2.46   | 88.34±0.90   | 93.69±0.83   | 98.90±2.57   | 104.85±3.94   | 107.79±4.22  | 113.22±7.12  | 124.03±3.68  | 126.90±3.78  | 127.69±5.13  |
|                                           |                                                                  | PSA (ng/ml)          | 0.48±0.01   | 0.68±0.10    | 0.68±0.11    | 0.73±0.14    | 0.90±0.28    | 0.91±0.11     | 1.24±0.02    | 1.42±0.36    | 1.29±0.05    | 1.36±0.02    | 1.39±0.03    |
|                                           |                                                                  | T/E (nmol/pmol)      | 6.76±0.24   | 7.65±0.26    | 9.32±0.82    | 10.68±0.68   | 11.45±0.30   | 10.69±0.86    | 8.58±0.75    | 7.68±0.75    | 6.68±0.41    | 6.38±0.67    | 6.04±0.45    |
|                                           |                                                                  | tT (nmol/l)          | 2.53±0.01   | 2.76±0.05    | 2.83±0.03    | 2.83±0.04    | 2.86±0.01    | 2.86±0.12     | 2.85±0.12    | 2.81±0.07    | 2.75±0.07    | 2.64±0.02    | 2.61±0.11    |
|                                           | Anastrozole + Finasteride treatment subgroup (Control-A+F, n=33) | fT (nmol/l)          | 1.13±0.01   | 1.24±0.03    | 1.29±0.03    | 1.29±0.02    | 1.34±0.03    | 1.37±0.01     | 1.39±0.03    | 1.34±0.02    | 1.30±0.07    | 1.26±0.02    | 1.25±0.01    |
|                                           |                                                                  | E2 (pmol/l)          | 0.38±0.01   | 0.38±0.01    | 0.37±0.01    | 0.36±0.02    | 0.36±0.01    | 0.41±0.02     | 0.45±0.01    | 0.47±0.01    | 0.50±0.02    | 0.54±0.02    | 0.54±0.02    |
|                                           |                                                                  | DTH (pg/ml)          | 176.75±0.52 | 166.97±9.11  | 155.65±7.98  | 158.08±17.79 | 218.90±17.86 | 241.52±18.73  | 274.45±13.07 | 276.22±14.50 | 312.36±16.35 | 326.46±17.42 | 326.80±27.62 |
|                                           |                                                                  | SHBG (nmol/l)        | 88.57±1.67  | 93.64±3.34   | 92.31±4.03   | 94.75±4.88   | 102.72±3.46  | 104.97±0.17   | 111.96±3.20  | 116.80±6.36  | 126.78±7.31  | 131.50±2.85  | 133.30±4.03  |
|                                           |                                                                  | PSA (ng/ml)          | 0.48±0.01   | 0.46±0.02    | 0.36±0.10    | 0.35±0.05    | 0.33±0.03    | 0.59±0.10     | 0.77±0.18    | 0.80±0.19    | 0.97±0.45    | 1.17±0.13    | 1.17±0.17    |
|                                           |                                                                  | T/E (nmol/pmol)      | 6.65±0.19   | 7.34±0.23    | 7.72±0.12    | 7.82±0.54    | 7.72±0.24    | 6.80±0.42     | 5.90±0.14    | 5.63±0.11    | 5.28±0.01    | 4.82±0.01    | 4.78±0.01    |

|                                                                              |                      |                     |                                     |               |                      |                     |                                     |              |                      |                      |                                     |              |
|------------------------------------------------------------------------------|----------------------|---------------------|-------------------------------------|---------------|----------------------|---------------------|-------------------------------------|--------------|----------------------|----------------------|-------------------------------------|--------------|
|                                                                              |                      |                     |                                     |               |                      |                     |                                     |              |                      | 14                   | 16                                  | 03           |
| Anastrozole +<br>Finasteride<br>treatment subgroup<br>(Control-A+F,<br>n=33) | tT (nmol/l)          | 2.52±0.01           | 2.86±0.03                           | 2.87±0.04     | 2.88±0.02            | 2.90±0.01           | 2.92±0.02                           | 3.05±0.05    | 3.06±0.07            | 3.07±0.04            | 3.06±0.03                           | 3.04±0.03    |
|                                                                              | fT (nmol/l)          | 1.14±0.01           | 1.25±0.01                           | 1.30±0.03     | 1.35±0.02            | 1.40±0.03           | 1.45±0.04                           | 1.48±0.03    | 1.51±0.00            | 1.53±0.01            | 1.56±0.02                           | 1.51±0.01    |
|                                                                              | E2 (pmol/l)          | 0.38±0.01           | 0.31±0.04                           | 0.27±0.01     | 0.25±0.01            | 0.23±0.01           | 0.22±0.01                           | 0.22±0.01    | 0.20±0.02            | 0.20±0.01            | 0.19±0.01                           | 0.19±0.01    |
|                                                                              | DTH (pg/ml)          | 176.04±31.02        | 169.55±5.96                         | 143.63±47.27  | 151.25±49.72         | 146.66±44.21        | 144.43±32.81                        | 161.10±1.80  | 134.51±25.90         | 122.34±31.64         | 129.72±21.14                        | 132.44±17.13 |
|                                                                              | SHBG (nmol/l)        | 84.73±1.05          | 92.52±3.56                          | 95.41±3.50    | 100.22±2.09          | 105.15±3.04         | 111.42±3.26                         | 122.27±5.07  | 126.15±10.32         | 137.91±9.09          | 139.25±7.22                         | 140.10±5.09  |
|                                                                              | PSA (ng/ml)          | 0.47±0.01           | 0.37±0.05                           | 0.31±0.03     | 0.26±0.04            | 0.25±0.01           | 0.21±0.04                           | 0.13±0.02    | 0.11±0.06            | 0.04±0.04            | 0.12±0.01                           | 0.14±0.02    |
|                                                                              | T/E (nmol/pmol)      | 6.63±0.15           | 8.50±0.39                           | 9.39±0.20     | 11.67±0.22           | 12.61±0.55          | 13.09±0.39                          | 14.16±0.91   | 15.09±0.95           | 16.00±0.60           | 16.53±1.24                          | 17.12±0.80   |
|                                                                              | tT (nmol/l)          | 2.52±0.01           | 2.58±0.08                           | 2.74±0.03     | 2.74±0.03            | 2.78±0.12           | 2.76±0.07                           | 2.67±0.04    | 2.64±0.01            | 2.66±0.15            | 2.62±0.14                           | 2.58±0.09    |
|                                                                              | fT (nmol/l)          | 1.13±0.01           | 1.23±0.02                           | 1.26±0.05     | 1.28±0.03            | 1.32±0.01           | 1.36±0.01                           | 1.34±0.02    | 1.32±0.02            | 1.28±0.02            | 1.22±0.01                           | 1.21±0.01    |
|                                                                              | E2 (pmol/l)          | 0.38±0.01           | 0.38±0.01                           | 0.40±0.02     | 0.47±0.02            | 0.51±0.02           | 0.54±0.02                           | 0.58±0.02    | 0.61±0.02            | 0.62±0.01            | 0.64±0.01                           | 0.69±0.02    |
| Placebo treatment<br>subgroup<br>(Control-P, n=33)                           | DTH (pg/ml)          | 173.16±4.96         | 187.22±9.53                         | 174.28±6.80   | 258.70±15.39         | 348.23±8.87         | 441.35±7.77                         | 449.93±21.83 | 526.62±9.85          | 548.81±7.93          | 582.11±35.72                        | 584.70±46.62 |
|                                                                              | SHBG (nmol/l)        | 85.90±0.86          | 86.80±2.77                          | 87.76±1.84    | 91.35±1.52           | 93.49±1.74          | 100.04±3.08                         | 105.93±2.04  | 110.54±4.97          | 120.69±2.63          | 121.93±3.21                         | 122.65±2.36  |
|                                                                              | PSA (ng/ml)          | 0.47±0.01           | 0.51±0.05                           | 0.63±0.05     | 0.72±0.09            | 0.83±0.04           | 1.09±0.09                           | 1.25±0.02    | 1.31±0.05            | 1.39±0.06            | 1.44±0.02                           | 1.43±0.05    |
|                                                                              | T/E (nmol/pmol)      | 6.69±0.10           | 6.73±0.29                           | 6.67±0.24     | 5.80±0.28            | 5.59±0.24           | 5.27±0.35                           | 5.05±0.26    | 4.63±0.21            | 4.44±0.05            | 3.80±0.11                           | 3.76±0.08    |
|                                                                              |                      |                     |                                     |               |                      |                     |                                     |              |                      |                      |                                     |              |
| tT (nmol/l)                                                                  | Block (time)         | <i>F</i><br>256.906 | <i>P</i> -value<br><b>&lt;0.001</b> | fT (nmol/l)   | Block (time)         | <i>F</i><br>493.276 | <i>P</i> -value<br><b>&lt;0.001</b> | E2 (pmol/l)  | Block (time)         | <i>F</i><br>1005.619 | <i>P</i> -value<br><b>&lt;0.001</b> |              |
|                                                                              | Group (intervention) | 306442.084          | <b>&lt;0.001</b>                    |               | Group (intervention) | 539639.342          | <b>&lt;0.001</b>                    |              | Group (intervention) | 88391.168            | <b>&lt;0.001</b>                    |              |
| DTH (pg/ml)                                                                  | Block (time)         | <i>F</i><br>351.587 | <i>P</i> -value<br><b>&lt;0.001</b> | SHBG (nmol/l) | Block (time)         | <i>F</i><br>30.27   | <i>P</i> -value<br><b>&lt;0.001</b> | PSA (ng/ml)  | Block (time)         | <i>F</i><br>62.85    | <i>P</i> -value<br><b>&lt;0.001</b> |              |
|                                                                              | Group (intervention) | 20193.725           | <b>&lt;0.001</b>                    |               | Group (intervention) | 14860.976           | <b>&lt;0.001</b>                    |              | Group (intervention) | 1194.3               | <b>&lt;0.001</b>                    |              |
| T/E (nmol/pmol)                                                              | Block (time)         | <i>F</i><br>1288.17 | <i>P</i> -value<br><b>&lt;0.001</b> |               | Block (time)         |                     |                                     |              | Block (time)         |                      |                                     |              |
|                                                                              | Group (intervention) | 73208.316           | <b>&lt;0.001</b>                    |               | Group (intervention) |                     |                                     |              | Group (intervention) |                      |                                     |              |

**Abbreviations:** BPH, benign prostatic hyperplasia; BPH-A, testosterone induced BPH-anastrozole treatment subgroup; BPH-F, testosterone induced BPH-finasteride treatment subgroup; BPH-A+F, testosterone induced BPH-anastrozole + finasteride treatment subgroup; BPH-P, testosterone induced BPH-placebo treatment subgroup; Control-A, naturally aging BPH-anastrozole treatment subgroup; Control-F, naturally aging BPH-finasteride treatment subgroup; Control-A+F, naturally aging BPH-anastrozole + finasteride treatment subgroup; Control-P, naturally aging BPH-placebo treatment subgroup; cm, centimetre; DHT, dihydrotestosterone; E2, estradiol; fT, free testosterone; g, gram; PSA, prostate-specific antigen; SHBG, androgen-binding globulin; tT, total testosterone; T/E, the ratio of testosterone to estradiol; W, week.

*P*-values were calculated using the analysis of variance in random blocks.

The boldface represents statistical significance (*P*<0.05).