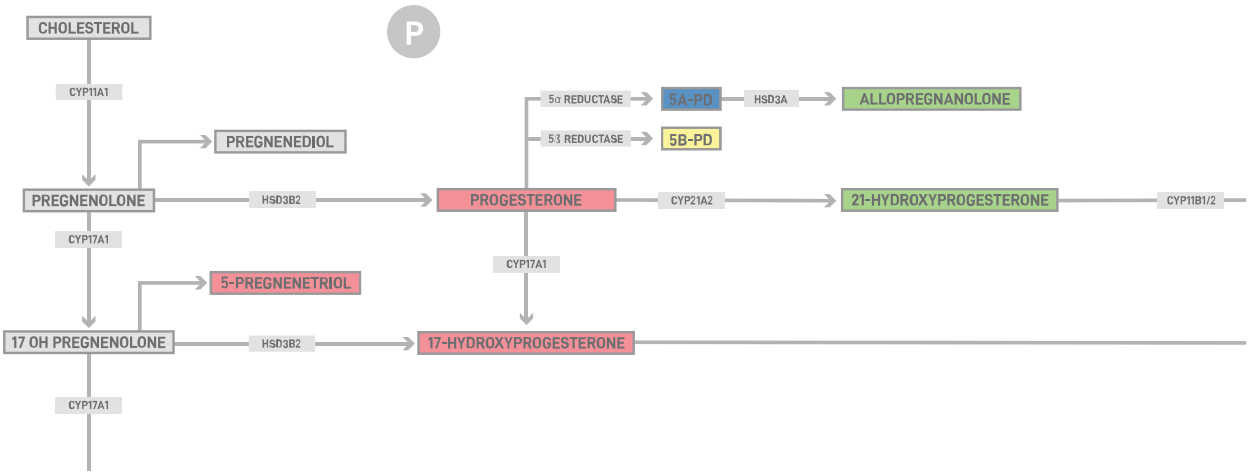
# Androgens & Progesterones profile; urine

DOCTOR'S DATA INC.

**Order:** 999999-9999
**Test:** X999999-9999-1
**Client #:** 999999
Doctors Data Inc
123 Main St.
St. Charles, IL 60174 USA

**Patient:** Sample Patient
**Id:** 999999
**Age:** 61 **DOB:** 01/01/1960
**Sex:** Female
**Body Mass Index (BMI):** 25
**Menopausal Status:** Post-menopausal

| Sample Collection | Date/Time |
|---|---|
| Dinnertime | 12/30/2022 19:20 |
| Bedtime | 12/30/2022 22:30 |
| Waking | 12/31/2022 07:00 |
| 2 Hr. Post Waking | 12/31/2022 09:30 |
| Collection Period | Multipoint daily |
| Date Received | 01/01/2023 |
| Date Reported | 01/02/2023 |




| Progesterones | | Result | Unit | L WRI H | Reference Interval |
|---|---|---|---|---|---|
| Progesterone | (P4) | 0.464 | ng/mg Creat/Day | | 0 – 0.22 |
| 5α-Pregnanediol | (5A-PD) | 18.6 | ng/mg Creat/Day | | 21 – 50 |
| 5β-Pregnanediol | (5B-PD) | 255 | ng/mg Creat/Day | | 79 – 280 |
| Allopregnanolone | (ALLOP) | 2.74 | ng/mg Creat/Day | | 1.4 – 4.8 |
| 21-Hydroxyprogesterone | (21-OHP) | 0.837 | ng/mg Creat/Day | | 0.3 – 1.4 |
| 17-Hydroxyprogesterone | (17-OHP) | 0.629 | ng/mg Creat/Day | | 0.17 – 0.55 |
| 5-pregnenetriol | (5-PT) | 204 | ng/mg Creat/Day | | 35 – 120 |

| Ratios and Calculations | | Result | Unit | L WRI H | Reference Interval |
|---|---|---|---|---|---|
| 5A-PD:5B-PD | (alpha vs beta metabolism) | 0.073 | | | 0.1 – 0.5 |

| Creatinine | Result | Unit | L WRI H | Reference Interval |
|---|---|---|---|---|
| Creatinine/day | 104 | mg/dL/Day | | 30 – 225 |

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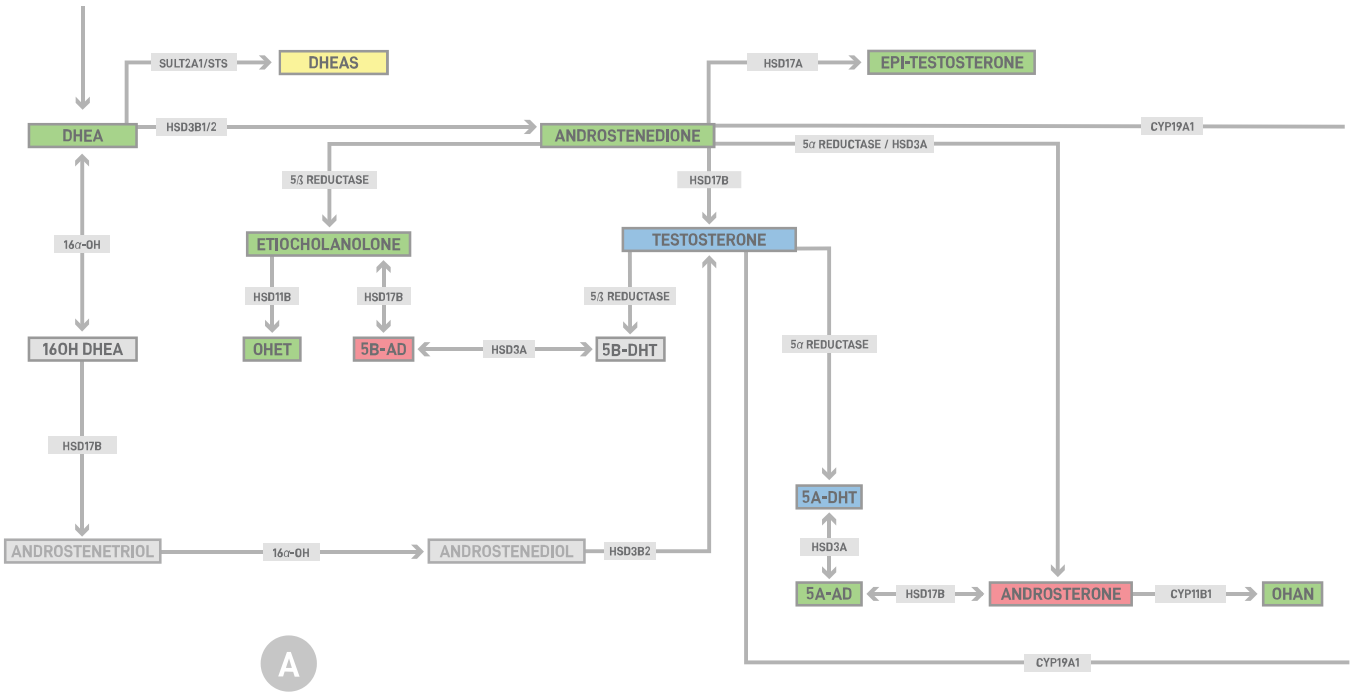


| Androgens | | Result | Unit | L | WRI | H | Reference Interval |
|---|---|---|---|---|---|---|---|
| Androstenedione | (A4) | 1.15 | ng/mg Creat/Day | | | | 0.2 – 5.3 |
| EPI-Testosterone | (EPI-T) | 1.38 | ng/mg Creat/Day | | | | 0 – 5 |
| Testosterone | (T) | 1.91 | ng/mg Creat/Day | | | | 0.25 – 10.9 |
| Androsterone | (AN) | 928 | ng/mg Creat/Day | | | | 170 – 850 |
| 11-hydroxy-Androsterone | (OHAN) | 762 | ng/mg Creat/Day | | | | 250 – 1000 |
| 5α-Androstanediol | (5A-AD) | 8.63 | ng/mg Creat/Day | | | | 4.8 – 16 |
| 5α-Dihydrotestosterone | (5A-DHT) | 0.391 | ng/mg Creat/Day | | | | 0.2 – 6 |
| Etiocholanolone | (ET) | 1070 | ng/mg Creat/Day | | | | 240 – 1410 |
| 11-hydroxy-Etiocholanolone | (OHET) | 83.0 | ng/mg Creat/Day | | | | 20 – 710 |
| 5β-Androstanediol | (5B-AD) | 65.4 | ng/mg Creat/Day | | | | 14 – 62 |
| Dehydroepiandrosterone | (DHEA) | 33.9 | ng/mg Creat/Day | | | | 10 – 120 |

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| Androgens | | Result | Unit | Reference Interval |
|---|---|---|---|---|
| Dehydroepiandrosterone Sulfate | (DHEAS) | 173 | ng/mg Creat/Day | 35 – 300 |

| Ratios and Calculations | | Result | Unit | Reference Interval |
|---|---|---|---|---|
| DHEA+DHEAS | | 207 | ng/mg Creat/Day | 62 – 283 |
| Androsterone (5α) / Etiocholanolone (5β) | (5α Reductase Activity) | 0.864 | | 0.8 – 2.6 |
| Testosterone / EPI-Testosterone | | 1.38 | | 0.7 – 3 |

| Creatinine | Result | Unit | Reference Interval |
|---|---|---|---|
| Creatinine/day | 104 | mg/dL/Day | 30 – 225 |

# Commentary

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## Progesterones

**Progesterone (P4)**
In cycling females, progesterone is primarily produced in the corpus luteum of the ovaries, and to a lesser degree in the adrenal glands. Menopausal females continue to produce small amounts of progesterone in the adrenal glands. Elevated levels of progesterone may be due to high dose pregnenolone supplementation, progesterone supplementation, exogenous progesterone exposure, pregnancy, disorders of luteinization, increased HSD3A activity, reduced activity of CYP21A or CYP17A, and rarely thecal cell tumors. In addition, elevations of both progesterone and pregnanediol, progesterone's major metabolite, have been reported in 21 hydroxylase deficiency.

**5A-PD**
Lower levels of pregnanediol have been associated with amenorrhea, decreased ovarian function, PCOS, ovarian cancer, and certain complications of pregnancy.

**17-Hydroxyprogesterone (17-OHP)**
17-Hydroxyprogesterone is the product of progesterone hydroxylation. Elevations are associated with PCOS, idiopathic hirsutism, congenital adrenal hyperplasia, 11-beta-hydroxylase deficiency, and adult onset viralizing adrenal hyperplasia. Additionally, hyperinsulinemia and hyperglycemia (metabolic syndrome) push 17-hydroxylation of progesterone.

**Pregnenetriol (5-PT)**
5-pregnenetriol is a metabolite of 17α-pregnenolone, an intermediary resulting from the hydroxylation of pregnenolone by CYP 17A1 enzyme. Elevations in urine may be seen in cases of PCOS, Cushing's Syndrome, congenital adrenal hyperplasia, and adrenocortical carcinoma.

**5A-PD : 5B-PD**
The metabolic prioritization for alpha or beta reductase activity within the progesterone pathway may be confirmatory of a general preference of metabolism. Comparing these results with the metabolic preference of androgens and corticoids may provide additional insight.

## Androgens

**Androsterone (AN)**
Androsterone is the product of androgens metabolized by 5-alpha reductase. It acts as a neurosteroid and a weak potentiator of GABA-A receptor activity. Androsterone may also be converted to DHT via backdoor pathway using HSD3β and HSD17β making it a metabolic intermediate. Potential causes of AN elevation may include PCOS, over supplementation of DHEA or pregnenolone, androgen producing gonadal tumors, congenital adrenal hyperplasia, adult-onset adrenal hyperplasia, serious illness, shock, and burns.

**5β-Androstanediol (5B-AD)**
5B-AD is the result of the 5-beta reduction of DHT and is a metabolite of etiocholanolone. Elevated levels may be due to an increased conversion via 5-beta reductase, or from DHEA or testosterone supplementation.