

SEX HORMONES DRUGS & HAIR

BY DEREK R. COPPERTHWAITTE

SIMPLY STATED, THERE ARE only two types of prescription drugs that are of professional concern to electrologists: those drugs that contain natural or synthetic hormones, and those that do not contain hormones but have the capacity to disturb the normal functioning of the body's endocrine system. Surprisingly, there are less than fifty drug preparations on the market that appear in the latter group. The great majority belong in the first-mentioned category, which are drugs that contain actual hormones — more specifically, the so-called “sex hormones.”

The hormones that control sexual development and sexual characteristics normally respond slowly to stimuli and are fairly constant in males; not given to large swings. For the female, the cyclic relationship is especially important and must be regularly maintained if there is to be normal hormone secretions.

The sex hormones fall mainly into three classes: **androgens**, the male hormones (flouxymesterone, methylestosterone and testosterone), and two groups of female hormones, the **estrogens** (chlorotrianisene, conjugated estrogens, esterified estrogens, estradiol, diethylstilbestrol, estrone, estropipate, ethinyl estradiol, and quinestrol), and the **progesterones** (hydroxyprogesterone, medroxyprogesterone, megestrol, norethindrone and norgestrel).

Androgens

Androgens (Table 1), the so-called “male hormones,” stimulate the hair follicles and the sebaceous glands and are responsible for changing fine, vellus hairs into thick terminal hairs. In men, these powerful hormones are used as replacement therapy for conditions associated with testosterone deficiency, such as impotence, hypogonadism and the male climacteric. They may also be prescribed for women with menorrhagia, senile and idiopathic osteoporosis, delayed bone healing, and frigidity.

Among androgen's many undesirable side effects for women are clitoral enlargement, female virilization, seborrhea and acne, male pattern baldness and hirsutism.

Estrogens

Like the androgens, estrogens (often referred to as “female hormones”) are found in both sexes, but by far the greatest levels are generated by the ovaries of the female. These hormones (Table II) have the ability to promote estrus and stimulate the development of secondary sex characteristics. In drug therapy they are widely used in the treatment of ovarian failure (or removal) in young women, and for menopausal syndrome, postmenopausal atrophy of genital tissues, and postmenopausal osteoporosis, as well as certain kinds of breast cancer.

Adverse effects that may be associated with estrogen replacement drugs include breast enlargement, changes in cervical secretion and menstrual flow, changes in sex drive, fluid retention, weight gain or loss, depression, dizziness, skin irritation, darkening of the skin, and — most importantly — increased risk of cancer of the uterus after three years of continual use. As is the case with all sex hormones, estrogens list excessive hair growth (and possible hair loss) among their undesirable side effects.

Progesterones

Along with estrogen, a woman's ovaries produce progesterone, the principal progestational hormone (often referred to as progestin). It is the natural function of progesterone to prepare the uterus for pregnancy and ready the breasts for lactation, but in hormone therapy its use is extended to include treatment for weight loss, cancer of the breast and uterus, and conception control.

The possible side effects of progestin therapy are much the same as those given for other female sex hormones: appetite or weight changes, breast tenderness or

enlargement, blood clots, menstrual cycle changes, depression, hair loss, and excess hair growth.

Oral contraceptives

With such a great number of different drugs on the market it is not unreasonable to assume that a fairly high percentage of an electrologist's clients have unwanted hair growth caused by a medication they are taking. Supporting this assumption is the fact that a very significant number of woman today between the ages of 16 and 42 are on a steady regimen of oral contraceptives (OCs) — which are high on the list of drugs that can cause unwanted hair. Among those women who are passed the need for oral contraceptives, there is likely to be a significant percentage on hormone replacement therapy (HRT) drugs, which contain a varying amount of the same hormones as those in OCs.

Oral contraceptives, (Table III) universally known as OCs or “The Pill,” consist of synthetic forms of estrogen and progesterone combined in a single tablet. A less common tablet, one containing only progesterone (or progestin), is sometimes referred to as the “mini-pill.”

Estrogen and progesterone normally regulate a woman's menstrual cycle and the fluctuating levels of these hormones play an essential role in pregnancy. By suppressing pituitary hormones that stimulate ovulation, the pill creates in the blood the same chemical environment that exists during pregnancy, and thus becomes a highly effective form of birth control.

However, when the actions of estrogen and progesterone are translated to the pill, a long list of possible side effects (as noted above for female hormones) is generated. Among the 30 – 40 possible “adverse reactions” enumerated, the most important for electrologists are those that cause a negative skin reaction: hives, acne, itch, skin rash or discoloration (brown blotching), and “excessive growth of hair on the face, back, chest, or stomach.”

Other hormonal methods of contraception, such as implants, shots, and patches, involve the same drugs and have the same potential side effects. To help reduce these side effects, oral contraceptives are available in a wide range of estrogen and progesterone concentrations.

Corticosteroids and Hair Growth

Next to the sex hormones, the hormones of most importance to electrologists are the **corticosteroids**, the steroid hormones produced by the body's adrenal gland in both men and women.

In addition to secreting a small amount of the sex hormones (largely provided by the male testes and the female ovaries), the adrenal cortex produces aldosterone — which causes the kidneys to excrete potassium and retain sodium, cortisol, corticosterone, and cortisone — that together help the body resist stress, metabolize food intake, control immune response and inhibit inflammation.

Cortisone is by far the best-known of the adrenal steroids, and many people refer to all the steroids as cortisone. But real cortisone is rarely prescribed today because of its propensity to cause sodium and water retention and potassium deficiencies. However, modern synthetic steroids have fewer adverse side effects.

Cortisone is largely inactive in the body until it is converted to hydrocortisone. Synthetic versions of hydrocortisone, like their natural counterparts, are not often given internally but are in common use as topical preparations (creams, ointments, gels and solutions) to treat inflammations, allergies, pruritus, and collagen diseases.

Table I

ANDROGENS

Male Hormones, including *fluoxymesterone, methyltestosterone, testosterone.*

| | | |
|--------------|----------------------------|-------------------------|
| Anadrol-50 | Depo-Testadiol | Testim |
| Anapolon | Depo-Testosterone | Testoderm |
| Andro LA 200 | Estradiol Cypionate- | Testosterone Cypionate |
| Androderm | Testosterone Cypionate | Testosterone Enanthate |
| AndroGel | Estradiol Valerate-Testos- | Testosterone Propionate |
| Android | terone Enthanate | Testred |
| Android-10 | FIRST-Testosterone | Testro |
| Android-25 | FIRST-Testosterone MC | Testro AQ |
| Cyclomen | Halotestin | Testro-L.A. |
| Danocrine | Lonavar | Valertest No. 1 |
| Delatestryl | Oreton Methyl | Virilon |
| Dep Androgyn | Oxandrin | Winstrol |
| Depandro 100 | Striant | |

Prednisone is a synthetic steroid derived from cortisone. Its effects are much the same, except that it causes less sodium and water retention. Prednisolone is chemically very similar to prednisone, with virtually the same effects. Dexamethasone, methylprednisolone, and triamcinolone are synthetic adrenal steroids closely related to prednisolone.

All of the steroids (excluding the sex hormones) elaborated by the adrenal cortex and all their synthetic equivalents (including but not limited to: betamethasone, cortisone acetate, desonide, dexamethasone, fluocinolone, fluocinonide, halcinonide, hydrocortisone, meprednisone, methylprednisolone, prednisolone, prednisone, and triamcinolone) are collectively referred to as 'corticosteroids' in this article and its tables, and in the *International Hair Route Drug Chart*©.

Corticosteroids are administered either orally, parenterally, or topically for the treatment of a wide variety of allergic and inflammatory conditions. All of the preparations — especially the hydrocortisones — carry warnings reminding the consumer that when the drug is used topically some of it is inevitably absorbed through the skin and enters the bloodstream. The absorption of too much hydrocortisone can lead to unwanted side effects such as acne-like skin eruptions, blistering or peeling, redness, secondary infection, itching, and burning. Extensive or long-term use can cause glandular problems, high amounts of sugar in the blood or urine, Cushing's syndrome, and excessive hair growth.

Hair Growth as a Side Effect of Medication

Before an electrologist can begin treatments on a new client, a client case-history form has to be completed. The more comprehensive this document is, the better, because the practitioner must be aware of everything that might point to the underlying cause of the client's hair growth problem. Is the cause genetic? Or is it due to a health disorder? Is it what the medical profession calls idiopathic hirsutism ("cause unknown"), or does it originate with a medication that has been prescribed by the client's physician for a different health problem? Whatever the case, as much background information as possible has to be ascertained before the electrologist can provide proper treatment. Understanding the cause of the hirsutism is an important part of the cure.

One of the most important entries in the case history record (more important perhaps than many electrologists realize), is the question that determines what prescription drugs, if any, the client is taking for non-hair-related disorders.

Excessive hair growth that can be

Table II

ESTROGENS

Female Hormones, including — *chlorotrianisene, conjugated estrogens, esterified estrogens, estradiol, diethylstilbestrol, estrone, estropiate, ethinyl estradiol, and quinestrol.*

| | | | |
|---------------------|--------------------|---------------|----------------------|
| Activella | Estradiol Patch | Gynodiol | Premarin |
| Alora | Estradiol Valerate | Gynogen LA 20 | Premarin Intravenous |
| C.E.S. | Estragyn 5 | Harmogen | Premarin Vaginal |
| Cenestin | Estragyn LA 5 | Honvol | Sandrena Gel |
| Climara | Estratab | Kestrone 5 | Sondrena Gel |
| Clinagen LA 40 | Estratest | Kliovance | Syntest DS |
| Combipatch | Estratest H.S. | Menaval-20 | Syntest HS |
| Delestrogen | Estring | Menest | Vagifem |
| Dep Gynogen | Estro-A | Menogen | Valergen |
| Depo-Estradiol | Estro-Cyp | Menogen HS | Vivelle |
| Depogen | Estrofem | Menoring | Vivelle-Dot |
| Esclim | Estrogenic | Neo-Estrone | Zumenon |
| Estalis continuous | Estrogens | Novofem | |
| Estalis Sequi | Estrone AQ | Ogen 0.625 | |
| Estinyl | Estronol-La | Ogen 1.25 | |
| Estrace | Fematrix | Ogen 2.5 | |
| Estraderm | Femring | Ortho-Est | |
| Estraderm TTS | Femseven | Ortho-Prefest | |
| Estradiol Cypionate | General | Prefest | |

directly attributed to medical drug therapy is called “iatric hirsutism” (*iatric* being a Greek word pertaining to medicine or to a physician). And those drugs in the pharmaceutical directory that officially include “excessive hair growth” (or similar) in the list of possible side effects, are certainly of serious interest to electrologists.

Research by *International Hair Route* to produce a complete and authoritative account of all the proprietary drugs that can cause iatric hirsutism has resulted in a list of more than 726 brand names [see pullout pages 19-22, in this issue].

Drugs and Hormones

Any discussion of the relationship between drugs and hair growth must begin with a brief review of the body’s endocrine system, for it is from this source – with only a few rare exceptions – that all cases

of women’s hirsutism originates.

It is quite normal for young females to have strong, healthy scalp hair, eyebrows and eyelashes, and – following the onset of puberty – on the genitals and in the armpits. Also acceptable under the definition of normal is a certain amount of terminal hair on the legs and forearms, even though a woman might consider such hair abnormal and want it removed.

The pattern of hair growth for a young male is the same as that of the female until puberty, when higher concentrations of the so-called “male sex hormones” (present in both men and women) and heredity conspire to expand the sexual hair of the man to include the upper lip, beard area, neck, chest and escutcheon. The degree of hairiness on the extremities of men is also usually greater too, and may be widely distributed to include the thighs,

the upper arms, nape of the neck, shoulders and back.

These are, more or less, the normal patterns of hair growth for humans; and physicians, electrologists and cosmetologists who specialize in hair removal do not enter the picture unless an individual comes to the conclusion that the type or amount of hair on his or her body is either unhealthy, uncomfortable, or socially unacceptable.

The hair of the scalp, eyebrows and eyelashes is mostly androgen independent, meaning that it is not totally reliant on the male hormones for its growth. The opposite is true for the sexual hair that appears at puberty. It is very dependent on androgens, especially testosterone, the major hormone affecting the growth of hair.

When things are working as they should, testosterone is converted in the hair follicle to another hormone, dihydrotestosterone, by the enzyme 5 alpha reductase. If for any reason there is a dysfunction of the endocrine system or its individual glands – thereby raising or decreasing androgen production – the normal patterns of hair growth are inevitably disrupted. Too little testosterone (an extreme example would be the eunuch) will result in the loss of sexual hair. Too much testosterone will lead to an excess of sexual hair, the condition we call hirsutism.

The sheer complexity of the endocrine system makes it vulnerable to breakdown. Endocrine hyperfunction and hypofunction may originate with the pituitary – the master gland – or with any of the target glands themselves. Tumors can also appear in other parts of the body, like the lungs or stomach, and produce hormones that cause endocrine dysfunction. Multiple cysts on the ovaries could possibly be the cause of a woman’s hirsutism, or maybe the medication she is taking for high blood pressure is at the root of her problem. These and countless other conditions can interfere with the ability of the sex hormone-producing glands — the ovaries (in women), the testes (in men) and the adrenals of either gender — to secrete the optimum amount of testosterone into the system.

It will come as no surprise to electrologists to learn that the drugs which are most likely to list excessive hair growth as a possible adverse reaction are those which contain sex hormones (or their synthetics). *℞*

Please refer to pages 19 — 22 and our web site, www.hairroute.com, for the complete *International Hair Route Drug Chart*®, listing all the drugs, drug tables and classes mentioned in this article.

Table III

ORAL CONTRACEPTIVES

Combining synthetic versions of two female hormones:
estrogen and progesterone (progestins).

| | | |
|----------------------------|-----------------------|-----------------------|
| Allesse | Microgestin FE 1/20 | Ortho-Novum 1 50 |
| Allesse 21 | Microgynon 30 | Ortho-Novum 1/35 |
| Allesse 28 | Minestrin 1/20 | Ortho-Novum 1/50 |
| Apri | Min-Ovral | Ortho-Novum 10/11 |
| Aviane | Min-Ovral 21 | Ortho-Novum 7/7/7 |
| Aygestin | Min-Ovral 28 | Ovcon 35 |
| Brevicon | Mircette | Ovcon 50 |
| Camila | Modicon | Ovral |
| Cilest | Mononessa | Ovranette |
| Crinone | Necon 0.5/35 | Ovrette |
| Cryselle | Necon 1/35 | Ovysmen |
| Cyclessa | Necon 1/50 | Plan B |
| Demulen 1/35 | Necon 10/11 | Portia |
| Demulen 1/50 | Necon 7/7/7 | Preven |
| Demulen 50 | Nelova 1/35 | Preven EC |
| Depo-Provera Contraceptive | Neogest | Primolut N |
| Desogen | Nora-Be | Prochieve |
| Enpresse | Norethin 1/35 E | Progesterone Wettable |
| Errin | Norethindrone Acetate | Prometrium |
| Estrostep Fe | Noriday | Seasonale |
| femhrt 1/5 | Norimin | Sequilar ED |
| First Progesterone MC10 | Norinyl | Sprintec |
| First Progesterone MC5 | Norinyl 1/35 | Synphasic 28 |
| Genora 1/35 | Norinyl 1/50 | Tri-Cyclen |
| Jenest | Norinyl-1 | Tri-Levlen |
| Jolivetle | Norinyl-1 28 | TriNessa |
| Junel | Norplant | Trinordiol |
| Kariva | Nor-QD | Tri-Norinyl |
| Lessina | Nor-QD | Trinovum |
| Levlen | Nortrel | Triphasil |
| Levlite | Nortrel 7/7/7 | Triphasil 21 |
| Levora | NuvaRing | Triphasil-28 |
| Lo/Ovral | Ogestrel | Triquilar |
| Lo/Ovral-28 | Ortho 1 35 | Tri-Sprintec |
| Loestrin 21 1.5/30 | Ortho 7 7 7 | Trivora |
| Loestrin 21 1/20 | Ortho Cyclen | Utovlan |
| Loestrin FE 1.5/30 | Ortho Evra | Yasmin |
| Loestrin FE 1/20 | Ortho Micronor | Zovia 1/35 |
| Low-Ogestrel | Ortho Tri-Cyclen | Zovia 1/50 |
| Marvelon | Ortho Tri-Cyclen Lo | |
| Menzol | Ortho-Cept | |
| Microgestin FE 1.5/30 | Ortho-Novum | |