

Improvement of sexual function during pill use by normalising free testosterone levels

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Combined oral contraceptives (COCs) are highly accepted, very safe and extremely effective when used according to its method of use. However, COCs are known to reduce androgen levels, especially testosterone (T), by inhibiting ovarian and adrenal androgen synthesis and by inactivation of T due to binding to the increased levels of sex hormone-binding globulin (SHBG), caused by the ethinylestradiol (EE) component of the COC. Not much attention has been paid to the potential clinical consequences of this endocrine side effect of COCs. However, awareness of the importance of androgens for women is increasing and T deficiency in women has been associated with a broad range of undesired effects including diminished well-being and quality of life, mood changes (depression, irritation, moodiness), loss of energy, cognitive disturbances, interference with optimal sexual function, declining muscle mass and strength and lowering of bone mass and bone density. Some of these complaints like mood disturbances and diminished sexual function have also been reported as side effects of COCs.

Based on the hypothesis that it would be beneficial for sexual function and mood to maintain physiological androgen levels during COC use, a daily dose of 50 mg of the natural human adrenal androgen dehydroepiandrosterone (DHEA) was added to two different COCs. This novel concept of oral contraception is referred to as Androgen Restored Contraception (ARC). The endocrine and clinical effects of ARC have been evaluated in a series of clinical studies with the following results:

- 1) All COC users experience a loss of androgens, especially of the most important biologically active free T. Mean changes of free T from baseline were -68% and -81% for EE/Levonorgestrel (LNG) and EE/Drosperinone (DRSP) respectively ($P < 0.0001$)
- 2) COC use is related to lower scores in several domains of sexual function in healthy women, who had no sexual function complaints before COC use
- 3) By adding 50 mg/day DHEA to a COC the loss of total and free T can be restored completely ($P < 0.0001$) without causing side effects
- 4) Favourable clinical effects were observed on mood and on sexual arousal and desire, particularly in women with relatively high, but physiologic levels of free T during co-administration of DHEA.