trans-Resveratrol, a Natural Antioxidant from Grapes, Increases Sperm Output in Healthy Rats

trans-Resveratrol was reported to have health benefits including anticarcinogenic effects and protection against cardiovascular disease. One of the mechanisms by which it exerts its action is through modulating the estrogen response systems. Because estrogen is involved in male reproductive biology, we investigated the effect of trans-resveratrol on testis and spermatogenesis. Adult male rats were divided into 2 groups. The treated group was administered by gavage 20 mg/(kg · d) of trans-resveratrol suspended in 10 g/L of carboxymethylcellulose for 90 d, whereas the control group received only carboxymethylcellulose during the same period. The relative weight of testes did not differ between the groups. However, the diameter of the seminiferous tubules was significantly reduced from 437.5 ± 0.1 μm in the controls to 310.9 ± 0.1 μm in the resveratrol–treated rats. This decrease was accompanied by a significant increase in tubular density, from 3.20 ± 0.18 in controls to 6.58 ± 0.18 tubules/mm² in the treated group. Moreover, sperm counts were significantly greater in the resveratrol-treated rats (24.8 ± 3.30 × 10⁷) than in the control group (14.1 ± 0.80 × 10⁷), but sperm quality did not differ. Serum concentrations of gonadotrophins and testosterone were significantly higher in the resveratrol-treated group. We identified a novel activity of trans-resveratrol. The daily oral administration of this phytochemical to adult male rats enhanced sperm production by stimulating the hypothalamic-pituitary-gonadal axis, without inducing adverse effects.

In this table from the main article, you can see that testosterone levels were 33.25 nmol/L in the resveratrol group, and 12.51 in controls. The authors believe that the increased T was caused by increased FSH levels, indicating stimulation of the hypothalamic-pituitary-gonadotropinal axis, and in addition by a direct anti-estrogenic effect of resveratrol, inhibiting the aromatase enzyme.

Got resveratrol?