Testosterone: When Saliva, When Serum?

Bibliographies and References

1. **Validation of Salivary Testosterone As a Screening Test for Male Hypogonadism.** Morley, J et al. The Aging Male. September 2006; 9(3): 165-169.

2. **Increasing Insulin Resistance is Associated with a Decrease in Leydig Cell Testosterone Secretion in Men.** Pitteloud et al. The Journal of Clinical Endocrinology and Metabolism. (2005), 2636-2641.

Insulin resistance is associated with low testosterone (T) levels in men. The aim of the paper was to determine why. The researchers determined that insulin resistance is associated with a decrease in Leydig cell testosterone secretion in men. The mechanism of this remains unknown.

3. **Salivary Testosterone Concentrations in Prepubertal and Pubertal Males: Comparison with Total and Free Plasma Testosterone.** Ohzeki T, et al. Hormone Research. (1991), 36(5-6):235-7.

In this case report authors report salivary concentrations correlating well with plasma total testosterone (r = 0.72) and even better with free plasma testosterone levels (r = 0.89) among subjects with pubertal or adult plasma testosterone levels (>1.0 nmol/L). There was no apparent correlation among subjects with pre-pubertal or low plasma testosterone levels (< 1.0 nmol/L).

4. **Salivary and Plasma Bound and "Free" Testosterone in Men and Women.** Khan-Dawood FS, et al. American Journal of Obstetrics and Gynecology. (1984), 148(4):441-

Study looking at paired samples of plasma and saliva testosterone levels in 46 subjects (37 males, 9 females) using radioimmunoassay (RIA) and free testosterone by equilibrium dialysis. Correlation coefficient for plasma and salivary testosterone was r = 0.71 ($p < 0.001$). In men, salivary testosterone levels consisted of 78% testosterone while plasma testosterone levels only contained 4% of testosterone.

5. **Testosterone Concentrations in Human Seminal Plasma and Saliva and Its Correlation with Non-Protein-Bound and Total Testosterone Levels in Serum.** Sannikka E, et al. Int J Androl. (1983) 6(4):319-30.

This study, involving 67 subjects, showed a significant correlation between salivary testosterone and serum free testosterone levels (r = 0.75), and lesser correlation between total serum testosterone with free serum testosterone (r = 63) and total serum testosterone with salivary testosterone levels (r = 0.64) (no p values given for last 2 correlations).

6. **Salivary Testosterone in Men: Further Evidence of a Direct Correlation with Free Serum Testosterone.** Wang C, et al. Journal of Clinical Endocrinology and Metabolism. (1981) 53(5):1021-4.

Study measuring saliva testosterone and serum testosterone concentrations via radioimmunoassay (RIA) found excellent correlation. Also administered exogenous testosterone and found parallel elevations in saliva and serum testosterone levels.

7. **Dramatic Improvement of Penile Venous Leakage Upon Testosterone Administration.** A Case Report and Review of Literature. Yassin A, et al.

The main effect of testosterone was long-time assumed to be on sexual interest and, indirectly, on erectile function. Newer insight demonstrates that testosterone deficiency impairs the anatomical and physiological functions of penile erections. When testosterone levels are normalized, erectile dysfunction is at least in part restored.

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