

## The Inhibin Superfamily

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Inhibin is a dimeric glyco protein produced by the gonads which is involved in the regulation of pituitary FSH secretion. Inhibin consists of two chains. The  $\alpha$  subunit is made up of three regions. These are called Pro,  $\alpha$ N and  $\alpha$ C. The second chain is either the  $\beta$ A subunit or the  $\beta$ B subunit. The combination of the  $\alpha$  subunit and the  $\beta$ A subunit defines the inhibin A molecule. The combination of the alpha subunit and the  $\beta$ B subunit defines the inhibin B molecule. Non biologically active three  $\alpha$  subunit and fragments have also been identified.

A number of inhibin assays with specificities directed towards different regions of the inhibin molecule have now been developed. These will hopefully provide increased sensitivity and specificity.

We recently undertook a study to investigate the relationship of serum inhibin A and serum inhibin B with ovarian follicular development in women undergoing pituitary down regulation and ovarian stimulation with a fixed daily dose of recombinant human FSH (Puregon) in an IVF program. Thirty eight patients were treated randomly with either 100 or 200 international units per day of Puregon for a period of 9-14 days. Serum FSH, inhibin A, inhibin B,  $17\beta$  estradiol and follicular size and number were determined prior to FSH treatment and on every second day from days 4 - 6 throughout FSH treatment.

Serum FSH increased in a dose related manner to reach a maximum by days 4-6 and remain unchanged over the duration of treatment. Serum inhibin A and  $17\beta$  estradiol also increased with increasing FSH dose and continued to rise throughout the FSH treatment period. By contrast, serum inhibin B was increased by days 4-6 at both doses of FSH to reach a maximum by days 7-8, remaining unchanged thereafter.

Serum inhibin B, and to a lesser extent, inhibin A, correlated significantly with the number of oocytes retrieved even when assessed early (days 4-6) in the treatment period (inhibin B versus number of oocytes,  $r=0.89$ ,  $p<0.001$ , inhibin A versus oocytes  $r=0.61$ ,  $p<0.05$ ).

Serum inhibin A, inhibin B and  $17\beta$  estradiol were weakly correlated with the number of follicles  $<11$  mm when assessed on a daily basis. Stronger correlations were observed with follicles  $>11$  mm diameter during the late stages of treatment.

We have concluded that serum inhibin B levels determined during the early stages (days 4-6) of fixed dose FSH treatment provide an early indicator of the number of recruited follicles which are destined to form mature oocytes. In this context, serum inhibin B maybe of predictive value in monitoring ovarian hyperstimulation treatment for IVF.