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PROSTATE SPECIFIC ANTIGEN LEVELS IN SERUM DURING THE MENSTRUAL CYCLE: POSSIBLE REGULATION BY PROGESTERONE. E.P. Diamandis^{1,2}, N. Zarghami^{1,2}, L. Grass¹, E.R. Sauter³. ¹Dept of Pathology and Laboratory Medicine, Mount Sinai Hospital, Toronto, ON, M5G 1X5; ²Dept of Clinical Biochemistry, University of Toronto, Toronto, ON, M5G 1L5; ³Div of Population Science, Fox Chase Cancer Centre, Philadelphia, PA.

We previously found that prostate specific antigen (PSA) expression in the female breast is regulated by steroid hormones and their receptors. We have now examined if the PSA concentration in serum changes during the menstrual cycle of normal women. We found that PSA levels in serum are highest during the mid-late follicular phase, drop continuously with a half-life of 5-6 days between the late follicular phase and mid-cycle and reach a minimum during the mid-late luteal phase. PSA changes do not correlate with changes in LH, FSH or estradiol levels. However, PSA peaks seem to follow the progesterone concentration peaks with a delay of 10-12 days. Sera of some volunteers were tested for their ability to upregulate PSA protein and PSA mRNA in a tissue culture system based on the T-47D breast carcinoma cell line. Only sera obtained during the mid-late luteal phase were able to upregulate the PSA mRNA and protein. In stimulation experiments in-vitro, progesterone, but not LH, FSH, estradiol, hCG, prolactin or growth hormone, was able to upregulate PSA mRNA and protein in the T-47D cell line. These data suggest that progesterone, and possibly other corpus luteum steroids, stimulate target tissues for PSA production in a cyclical manner during the menstrual cycle.