

Ovulation Detection through Salivary Levels of Sialic Acid and Glycosaminoglycans

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Abstract

One in ten couples of reproductive age encounter some level of infertility. Identification of the period of ovulation in humans is critical in the treatment of infertility. Success in in vitro fertilization and embryo transfer has been associated with the exact time of ovulation. Saliva is a unique diagnostic fluid, the composition of which immediately reflects the sympathetic nervous system, parasympathetic nervous system, hypothalamic- pituitary-adrenal axis and immune system response to stress.

The study aims at evaluating the changes in salivary sialic acid and Glycosaminoglycans in the regular menstrual cycle. Thus, the presence of these carbohydrates in the ovulatory saliva makes the possibility to develop a biomarker for the detection of ovulation by noninvasive methods.

Randomly, seventy five volunteer females were recruited and divided into 5 groups; each contains 15 subjects as follow: Nine years old females and postmenopausal females as control groups, pre-ovulatory period, ovulatory period and post-ovulatory period females as experimental groups. Each female, of the experimental groups, underwent sonographic examination to estimate her period regarding ovulation. Unstimulated whole saliva was collected using the spitting method. Colorimetric procedure was used for total sialic acid determination and for Glycosaminoglycans quantitative determination, the method of ELISA was used.

The concentration of sialic acid was significantly decreased in saliva of females in the ovulatory phase of the menstrual cycle; whereas, a significant increase in salivary sialic acid concentration was in the post-ovulatory phase. Glycosaminoglycan concentration showed a gradual increase from the pre-ovulatory phase then ovulatory to reach its maximum in the post-ovulatory

phase with a significant difference between the pre-ovulatory and post-ovulatory phases. A significant correlation was not found between sialic acid and Glycosaminoglycans in different study groups.

On the basis of the results arrived at, the study concluded that there are remarkable cyclic variations in sialic acid and glycosaminoglycans during the menstrual cycle but in conclusion, glycosaminoglycans and sialic acid salivary levels cannot be used for the precise prediction of ovulation.