

# Abstract Details

**Session title:** [Session 41: Luteal phase support – have we got it right?](#)

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## Abstract title:

The artificial endometrial preparation for embryo transfer: The litmus test for a sex steroid regimen?

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## Abstract text

### **The artificial endometrial preparation for embryo transfer: The litmus test for a sex steroid regimen?**

The administration of exogenous progesterone (P) is needed for the luteal phase support in artificial endometrial preparation cycles with hormone replacement therapy (HRT) for embryo transfer. By promoting endometrial maturation, is essential for the embryo implantation process. The transformation of the endometrium from a proliferative to a receptive state depends on an adequate exposure to P, which prepares the uterus for implantation and the maintenance of pregnancy.

Progesterone has also non-hormonal actions such as allowing immune tolerance during pregnancy, especially affecting the synthesis of cytokines and the function of Natural Killers cells. Low exposure to P at the time of implantation or during early pregnancy may result in an implantation failure or spontaneous miscarriage.

Surprisingly, there is no individualization in the best route, dose or time of exogenous P administration, as published studies do not demonstrate that there is a clearly superior protocol. There are different administration routes of P such as vaginal, subcutaneous, intramuscular, oral or rectal. Until now, the vaginal route has been the most used in Europe. It has been shown that although serum P levels appear to be lower after vaginal than intramuscular administration, vaginal route results in an adequate secretory transformation and good pregnancy rates. This discrepancy suggests that the bioactivity of vaginal P in the uterus is higher, due to the effect of the first step of the uterus. For this reason, no measurement of serum P levels have been conducted to analyse if the absorption was adequate.

The best context to analyse the net impact of exogenous P is the artificial cycle, in which there is no endogenous production, in comparison with the stimulated or natural cycle. In this scenario, recent studies have suggested that serum P levels have a correlation with the success rate in artificial cycles when using the vaginal route. The only published prospective study analysing this topic was carried out in oocyte donation cycles performed in our centre, showing that there is a serum P threshold (9.2 ng/ml) below which ongoing pregnancy rates significantly decrease (32.7% vs 52,8%,  $p=0.016$ ). These results have been confirmed and validated in a large prospective study of almost 1200 unselected patients undergoing an embryo transfer in an artificial cycle, regardless the origin of the oocytes and after adjusting for any confounding factors (submitted to this ESHRE meeting).

Once demonstrated that these results can be extrapolated to the general infertile population, new research is focused on finding the best way to increase serum P levels and improve the live birth rate. Moreover, data about the reproducibility of this situation in a subsequent cycle when using the same doses of P or even the ability to predict at the beginning of the luteal phase that serum P levels will be low in the mid luteal phase will be also presented.

This unexpected finding has opened a line of research on the role of serum P on endometrial receptivity and the possibility of reversing the cases with low serum P levels, which could imply a change in our daily clinical practice and management of the luteal phase.

## **Keywords:**

Serum progesterone

vaginal administration  
artificial cycle  
embryo transfer  
ongoing pregnancy