

## Uphill Battle on the Paradigm Shift on the Targets of Human Chorionic Gonadotropin/ Luteinizing Hormone Actions

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Uphill battles have always been fought whenever there are paradigm shifts. It is no surprise then that it had to be fought when a body of work from around the world forced a paradigm shift on the targets hCG/LH actions. These hormones are structural and functional homologs that are believed to regulate only male and female gonads. In addition, hCG, which exists in humans and subhuman primates, was believed to be required only for about the first 9<sup>th</sup> weeks of pregnancy, even though low circulatory levels are present during the entire pregnancy. These two concepts have been forced to change, i.e. hCG and LH can also regulate many nongonadal tissues and hCG may be required throughout pregnancy in women.

The paradigm shift could be physiologically relevant as some of the actions that were previously attributed to other hormones by default, may now be attributable to hCG/ LH. Moreover, the complete tissue responses may require the actions of not only steroid hormones but also those of hCG/LH. Uterine actions of hCG/LH exemplify these possibilities. The paradigm shift can explain rapid early increase of hCG, followed by a gradual slowdown, reaching a peak and a subsequent fall to about 10% peak levels. Self-regulation of hCG biosynthesis can explain this hallmark feature of human pregnancy. In the absence of such a regulation, hCG can reach to a very high levels as it happens in hydatidiform moles.

As it turns out, the high hCG level could be required for tumor survival and growth in the host body [1].

The paradigm shift may also explain many previously unknown features of gestational trophoblastic diseases; hyperemes gravidarum, absence of fetal rejection, some pregnancy complications, endometrial cancer, Alzheimer's disease, etc. The new findings have led to potential novel therapeutic applications of hCG for the treatment of miscarriages, preterm birth, breast cancer, gynecological infections, including HIV/AIDS, rheumatoid arthritis, etc. These possibilities have been tested in humans and in non-human model systems. Even though hCG therapies are quite inexpensive and relatively safe, they have not made into mainstream clinical practice, due to lack of further research. Although the resistance to the findings on nongonadal targets for hCG/ LH actions has greatly abated, ambivalence still persists. After all, this concept is nothing new as there are multiple examples of hormones targeting non-conventional tissues.

There are reports of illegal hCG use as a performance enhancing drug by athletes and clinics promoting hCG use for weight loss. There is no good scientific data for rationalizing these hCG uses. However, the findings that hCG can act on multiple tissues, suggests that further research could refute or support the merit of these hCG uses.

### References

- 1) Rao ChV, Lei ZM (2007) The past, present and future of nongonadal LH/hCG actions in reproductive biology and medicine. Mol Cell Endocrinol 269: 2-8.

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