

# human Chorionic Gonadotropin (hCG) from Urine of Pregnant Women to Manipulate in vivo Ovulation and Pregnancy of Madura Cows

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## human Chorionic Gonadotropin (hCG) from Urine of Pregnant Women to Manipulate in vivo Ovulation and Pregnancy of Madura Cows

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### Abstract

The purpose of study was to determine biological potential of hCG for ovulation and pregnancy in Madura cows. The research was done using non-pregnant 45 Madura cows and without any reproductive disorders were divided into three groups. 15 cows were given 500 IU of hCG i/m from patent product (Chorulon, Intervet Holland) (T1), 15 cows were given 500 IU of hCG i/m isolate of pregnant women urine (T2), 15 cows maintained as control group (C). The results showed that there was no significant difference ( $p > 0.05$ ) for ovulation and pregnancy, between hCG from patent product and from pregnant women urine.

**Key words :** Madura cows, hCG, Pregnant women urine, Ovulation, Pregnancy.

hCG is a gonadotropin hormone which is extracted from pregnant women urine at 1.5 to 3.5 months of pregnancy (Hermadi *et al.*, 2018) and biologically it was known as LH like (Nwabuobi *et al.*, 2017). hCG have a therapeutic effect on receptive women. The use of hCG for *invitro* process of cattle oocyte maturation has been done (Hermadi *et al.*, *loc cit*), but in vivo biological potential of hCG for ovulation and pregnancy has not been able to be established. The purpose of this study was to determine the biological potential of hCG for ovulation and pregnancy in Madura cows.

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**Fig 1.** Diagnosis of dominant follicles in ovary of estrus cow with USG tool.

**Materials and Methods**

Urine was collected from pregnant women at 1.5 to 3.5 months, using charcoal for eliminating of steroid hormones and separating of hCG with sephadex coloumns chromatography G-100, Characterization of hCG isolates with SDS-PAGE and Western Blotting and purified by Elusi method, Biological potential test of hCG for ovulation and pregnantly in Madura cows. 45 Madura cows which were non pregnant without reproductive disorders, 2-3 years of age with a minimum body score of 2, were fed concentrate having a protein 15-14% at the rate of 3 kg/day/cow for 1 month. The cows were randomly divided into 3 groups of 15 cows each. The T1 group were injected with 500 IU of hCG from patent product (Chorulon, intervet Holland). The T2 groups injected with 500 IU of hCG from isolate of pregnant women urine. The untreated synchronized group were maintained as control group (C). Before hCG treatment PGF2 a estrus synchronization and artificial insemination was done after the initiation of oestrus.

**Results and Discussion**

Pregnancy verification, the quantitative blood tests and urine tests in humans were done to detect hCG between 6 and 12 days after ovulation (Fricke *et al.*, 1993) however, that the level of total hCG can vary during first 4 weeks of pregnancy, leading to incorrect results (Butler *et al.*, 2001). An increase of 35% of hCG in 48 hours is taken as a minimal increase to detect the pregnancy (Santos *et al.*, 2001).

The results were positive for estrus



**Fig 2.** Diagnosis of the 60<sup>th</sup> day of pregnancy using on an ultrasound (USG).

dominant follicles were noticed in ovary of estrus cow with USG tool (Fig 1).

The results of ovulation showed significant difference ( $p < 0.05$ ) between control group (C) with hCG from patent product (T1) and from pregnant women urine (T2), but no significant difference  $p > 0.05$  between T1 and T2. This result showed that there was opportunity to develop subordinate follicles into matured Graafian follicles though the all groups: C, T1 and T2 showed 100% of estrus symptoms, but only T1 and T2 have showed 100% ovulation based on dominant follicle in ovary. In addition, the LH or hCG receptor is also expressed in granulosa cells. The hCG or LH signaling pathways do not fully overlap, and this fact may have implications for the use of hCG in reproduction techniques (Cole, 2010). The illustrating that gonadotropin-releasing hormone (GnRH) agonists, initially presented as a substitute for hCG, have led to a new era of GnRH agonists followed by hCG which triggers ovulation (Cole, 2009).

After ovulating on 60<sup>th</sup> day in the T1 group with hCG from Chorulon, Intervet-Holland and T2 group with hCG from pregnant woman urine group respectively showed a positive pregnancy of 100% (15 cows) and 90% (14 cows) respectively (Fig 2).

The use of hCG for the purpose of folliculogenesis in cattle has not been able to explain the mechanism of both invivo development of follicles in the ovary and invitro in the process

of oocyte cattle maturation. Is the mechanism to follow endogenous FSH - LH rules or other factors?

hCG is secreted by syncytiotrophoblast originating from diffuse and differentiated cytotrophoblast cells (Choi and Smith, 2014; Nwabuobi *et al.*, *loc cit*) for a long time, the main known role of hCG is the promotion of progesterone secretion by the corpus luteum in early pregnancy (Ng *et al.*, 2001), acting through hCG or LH receptors. However, recently, many other functions of hCG, not only in the placenta but also in the myometrium, uterus and fetus, have been described (Cole, *loc cit*; Kirk *et al.*, 2013; Guibourdenche *et al.*, 2009).

### Summary

The conclusion, manipulate *in vivo* by use of hCG patent and hCG pregnant woman urine was followed by estrus, ovulation and pregnancy of Madura cows. The results showed that there was no significant difference  $p > 0.05$  between the treatment groups (hCG from patent product (T1) and from pregnant women urine (T2)).

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