THE DIAGNOSIS IMPORTANCE IN DOSING OVARIAN AND ADENOHYPOHYSIS HORMONES IN DAIRY COW OVARIAN FUNCTIONAL DISORDERS

D. DRUGOCIU[*], L. RUNCEANU, P. ROŞCA
University of Agricultural Sciences and Veterinary Medicine of Iaşi

Abstract - *The results of the hormonal dosages in cattle with ovarian hypotrophy of the first degree have shown an ovarian hypofunction by adenohypophysary hyposecretion, having FSH, LH and progesterone secretory insufficiency and a low level of prolactine. The same situation was registered in cows presenting an ovarian hypotrophy of the second degree. In the females diagnosed with persistent luteal body, the values of FSH/LH ratio had similar values. In cows with repeated artificial insemination syndrome, the FSH/LH ratio was of 1.29/l for FSH so, we may assess that the main factor of repeated artificial insemination is an adenohypophysary hyposecretion of L.H. For restoring the normal titre of LH and starting the ovulation we recommend that products with LH effect (HCG 1500 U.I.; Gn-RH 2.5 ml) should be administered in cows.*

Key words: cow, reproduction, hormons, dosage

REZUMAT: Valoarea diagnostică a dozării hormonilor ovarieni şi adenohipofizari în terapia tulburărilor funcţionale ovariene la vaci. *Rezultatele dozărilor hormonale la femelele diagnosticate clinic cu hipotrofie ovariană de gradul I au scos în evidenţă o hipofuncţie şi hiposecreţie adenohipofizară de FSH/LH şi un nivel scăzut al prolactinei. Aceleaşi aspecte s-au înregistrat şi în cazul vacilor diagnosticate cu hipotrofie de gradul II. La femelele cu corp luteal persistent, valorile raportului FSH/LH au avut valori asemănătoare. In cazul vacilor diagnosticate cu sindromul montelor repetate, raportul FSH/LH a fost de 1.29/1 în favoarea FSH-ului; deci, se poate afirma că s-a produs o hiposecreţie adenohipofizară de LH. Pentru refacerea titrului normal de LH şi producerea ovulaţiei, se recomandă ca, la aceste femele, să se administreze produse cu effect de LH (HCG 1500 UI, GN-RH, 2.5 ml).*

Cuvinte cheie: vacă, reproducere, hormoni, dozare

[*] E-mail: dan300457@yahoo.ro

INTRODUCTION

In the last period, there were many concerns on elucidating the opportunities and limits of using hormonal therapy in animal reproduction process (Aguer, 1981; Brueuel, Lewis, 1990; Paraipan, 1982).

Some of the specialists are skeptical in using hormonal therapy, because of the female individual reactions after the therapy. These reactions may appear because there is no differential therapy, according to the degree of the functional disorder (Bârțoiu, Seiciu, 2002; Nelis, 1995).

In order that these negative aspects of hormonotherapy should not appear, the clinical diagnosis must be corroborated with the laboratory one (the hormonal one). Once the titre of the gonadotropic hormones and the sexual hormones is established, the hormonal therapy can be applied according to their level (Galvin et al., 1995; Gong et al., 1955; Parez, 1994).

MATERIALS AND METHODS

In order to carry out the hormonal dosage, blood samples have been taken over, depending on the diagnosis, after the gynecology investigation and the clinical diagnosis. According to the clinical diagnosis, the females were grouped on disease categories: dairy cows with ovarian hypotrophy (stage I and II), females with repeated artificial insemination and females with persistent corpus luteum. The blood sample has been processed according to the usual technique, in order to obtain the blood serum.

For establishing the hormonal diagnosis, the dosage of progesterone, LH (luteinizing hormone), FSH (follicle stimulating hormone) and the serous prolactine was carried out. The serous progesterone titre determination was performed through the ELISA test, using streptanidine technology. The dosage of the LH, FSH and serous prolactine levels was performed through the ELISA sandwich test in one step, with magnified signal.

RESULTS AND DISCUSSION

The hormonal dosage in the diagnosed females with stage I of ovarian hypotrophy has shown an ovarian hypofunction by the adenohypophysis hyposecretion. This was caused by secretory insufficiency of the adenohypophysis hormones, FSH and LH.

The low titre of the gonadotropic hormones has produced an inhibition of the gonadotropin releasing factors (gonadotropin LH/FSH – Releasing Hormones). Due to this fact, the low level of LH in dairy cows with stage I of ovarian hypotrophy was 2.12 m UI/ml, and FSH was 4.02 m UI/ml at the lower

limit of the base level. A low medium level of progesterone and a high level of prolactine were found in females (6.24 mg/ml, on the average). Because of the high titre of prolactine and of hypoprogesteronemy (an average of 1.07 mg/ml) blocking of the sexual cycle, with the establishment of the anoestrus, was produced.

A similar situation was found at the group of females clinically diagnosed with stage II of ovarian hypotrophy. In these cows, the medium level of serous progesterone was low (0.23 mg/ml); the level of FSH was low (1.08 m UI/ml) and the level of prolactine was of 2.7 mg/ml. Clinically, these females diagnosed with stage II of ovarian hypotrophy, showed a prolonged state of anestrous.

Comparing these results to the ones from the control group, we have noticed that in the females with stage II of hypotrophy, the serous concentration of progesterone (0.23 mg/ml prolactine), and of titre (1.08 m UI/ml) was significantly lower, producing severe modifications in the genital apparatus.

In case of corpus luteum persistence, the decisive factor was the value of the mean ratio FSH/LH (1.28/1m UI/ml). To all these factors, the secretory insufficiency of PGF_2 α (prostaglandine 2 alpha) was added, resulting in the establishment of a prolonged anestrous estate. That is why we recommended the administration of a dose of PGF_2 α in females diagnosed with persistent corpus luteum.

In the clinically diagnosed females with "artificial insemination repeated syndrome", the statistic mean value of the FSH was 3.65 and LH was 2.81. Following the statistic calculation, the value of the FSH/LH ratio was 1.29/1 to the advantage of FSH. One can assess that the primary cause of the repeated A.I. was an adenohypophysis hyposecretion of LH. For restoring the physiological ratio between FSH and LH (1/3, so that ovulation could take place), the products with LH effect should be administered in females, a few hours before the A.I.

CONCLUSIONS

In the dairy cows clinically diagnosed with stage I and II of ovarian hypotrophy, an ovarian hypofunction with adenohypophisis hyposecretion was established.

For restoring the genital activities we recommend that in the dairy cows with ovarian hypotrophy, products with FSH or PMSG at doses of 1000 UI/cow should be administered.

In case of the females with "A.I. repeated syndrome", because of the hormonal dosage, an adenohypophysis hyposecretion of LH was established.

For restoring the normal titre of LH and starting the ovulation we recommend that products with LH effect (HCG 1500 U.I.; Gn-RH 2.5 ml) should be administered in cows.

REFERENCES

Aguer D., 1981 – *Les progestagènes dans la maîtrise des cycles sexuels chez les bovins.* Rec. Med. Vet., 157(1) : 53-60.

Bârțoiu A., Seiciu Fl., 2002 – *Gynecology and veterinary andrology.* Fundația România de mâine Publishing House

Brueuel K.F., Lewis P.E., 1990 – *Endocrine profiles and follicular development in early weaned postpartum cows.* Journal of Reprod. and Fertility, vol. 97, no. 1.

Galvin J., Ryan D.P., Boland M.P., Roche J.F., Yaakub H., Snyders S., O'Farrel K.Y., 1995 – *Ovarian follicular development following progestive and gonadotropin treatments at varying stages of the follicular wave and oestrus cycle.* J. Reprod. Fertil. Abstract, 15, 13.

Gong J.K., Campbell B.K., Bramley T.A., Peters A.R., Webb R., 1955 – *Evolution of the requirements for F.S.H. and L.H. during ovarian follicle growth and development in cattle.* J. Reprod. Fertil. Abstract, 15,7.

Nelis P.C., 1995 – *Compendium of Animal Reproduction* Publisher Intervet International B.V. Second edition.

Paraipan V., 1982 – *Hormone therapy in animal reproduction.* Ceres, Bucharest

Parez V., 1994 – Maîtrise de la reproduction dans l'espèce bovine. L'action vétérinaire – LHV. Supplément An. No. 1277