



Metabolic effects and reproductive performances in dairy cows treated with a functional feed (NAT® W3)

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INTRODUCTION

Administration of functional feed (NAT®W3) in high-producing dairy cattle was investigated to correlate metabolic efficiency to reproductive performances. The Authors want to study, also, the capability of laboratory diagnostic in evaluation and estimation of the reproductive capacities to select subjects to submit to reproductive praxis.

MATERIALS AND METHODS

The study involved 116 high-producing dairy cows, belonging to two farms (BA1 and BA2), in which bovines were fed with the same feed: grass family hay (especially oat hay), grass family hay silage (triticale and barley), and industrial feed. Moreover, the dairy cows were fed also with different addition of NAT®W3 (320 g/subj/die) for 4 months (april-july).

Functional feed contains vitamins E, A, D3, organic-selenium, polyunsaturated fatty acids (PUFA) and a prebiotic by fermented cereals. Effects of PUFA administered were particularly investigated in lipoprotein fractions composition, in blood.

The best reproductive performances was related to optimal relationship among LDL-cholesterol, total cholesterol and progesterone: in this trial, Authors can confirm this theory on the basis of obtained breeding performances. Study was carried out during the warmest period of the year, when mean daily temperature go up to 30°C. Metabolic parameters considered describe energetic, mineral and endocrine metabolisms. Determination were realized in blood-samples before, during, after the administration of NAT®W3.

RESULTS AND DISCUSSION

Reproductive indices studied were: open-days (fig.n.1) and percentage of pregnant cows (fig. n. 2).

Reproductive indexes recorded stressed that open-days varied from 120-130 to 85-92 (Fig. n.1). Number of services per conception was reduced from 121 to 95 at 60th day of treatment. In the subsequent four months, the value of the index settled between 90-95 days (Fig. n.1).

Strictly correlated, in fig. n.2 is shown that the percentage of pregnant cows increases by minimum 40% accompanied by a positive economic reflection for the farms considered. This increase tends to return to pre-treatment values after suspension the administration of NAT®W3; therefore, administration must be applied for all "transition" bovines to maintain good reproductive performances.

Trend analysis of fertility indices describes that blood levels of progesterone and NAT®W3 antioxidant capability are probably correlated and correlated also to reproductive performances.

Efficacy of treatment is demonstrated by the trend of the fertility indices in the post treatment period during which indices return progressively to the pre treatment values in about 60 days: this period correspond to the lipid tissue turnover time. During these days a temporary build-up of PUFA and liposoluble vitamins was observed (Gabaldo et al., 2007).

Blood progesterone levels were higher (1.8 times) in correspondence of the 21st day post partum in treated subjects respect to control (0.45 vs 0.85 ng/ml).

The level of Progesterone in blood seems to be linked to the LDL value which increase a few days before (see Figs n.3 and 4). Our results confirm this hypothesis formulated by Gummer (1988) and Saez (1983).

Fig.n.1: Variations in Open days in dairy cows after administration of NAT®Ω3

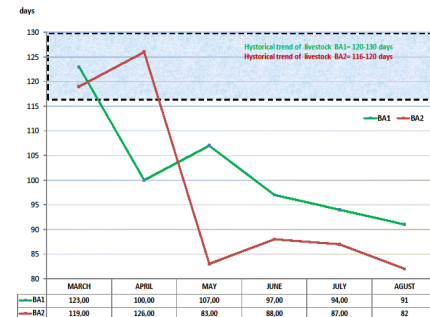


Fig. n. 2: Variations in percentage of pregnant cows after administration of NAT®Ω3

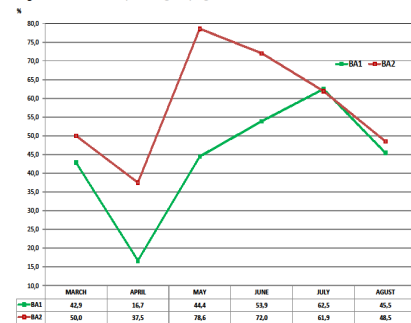


Fig. n.3: LDL-CHOL/TOT-CHOL in dairy cows after administration of NAT®Ω3

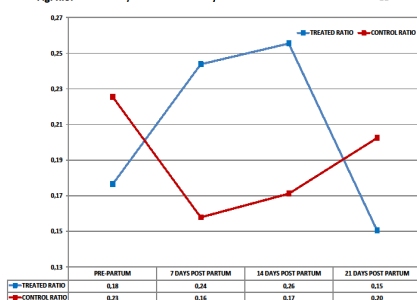
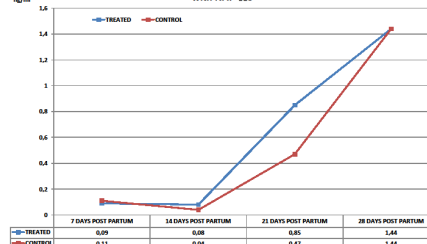


Fig. n.4: Progesteron: mean blood concentrations in dairy cows treated with NAT®Ω3



CONCLUSION

Data obtained in this study show that administration of PUFA, antioxidants and probiotics administered in dairy cows can remodel metabolisms correlated to fertility such as progesterone, prostaglandins and prostacyclins synthesis. These evidences are stressed by trends recorded in the herd concerning values of open-days and the number of services per conception.

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