



# Dairy cows treated with a functional feed (NAT<sup>®</sup>Ω3): investigation on PUFA's transfer in milk and cheeses

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## INTRODUCTION

In a previous trial we demonstrated the increased content of unsaturated fatty acids CLA and DHA in milk following to the administration of a functional feed NATΩ3 (WBC2008, Budapest). Goal of this study was to determine the more appropriate minimum quantity of diet supplement to obtain the same results performed with the first dosage applied, in addition, milk obtained with the new system of integration with NAT Omega 3 the was used for cheese making of three cheeses, in order to verify the passage of PUFA in cheese and to evaluate their nutritional value resulting.

## MATERIALS AND METHODS

The trial involved 116 high-producing dairy cows belonging to two livestock 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 NATΩ3 (320 g/subj/die) for 4 months. The difference concerned the way of administration of industrial feed, *ad libitum* and with automatic feeding system. The difference in the medium quantity of intake was very small: + 0.3 Kg/subj./day milk was utilized for cheese making.

## RESULTS AND DISCUSSION

Analysis of lipid fractions stressed variations in composition, especially pointed out the transfer of PUFA in different cheeses, making their composition more suitable for a more "salutistic" intake.

"Mozzarella": total lipids +0,96%, total proteins +1,22%, CLA (C18:2) +118,67%, DHA (C22:6) +27%, EPA (C20:5) +60,00%, palmitoleic acid (C16:1) +29,15%, decrease of stearic acid (C18:0) -9,84%.

"Canestrato": total lipids +0,46%, total proteins +0,66%, CLA (C18:2) +160,42%, DHA (C22:6) + 80,00%, EPA (C20:5) +154,54%, palmitoleic acid (C16:1) +39,00%, decrease of stearic acid (C18:0) -12,73%.

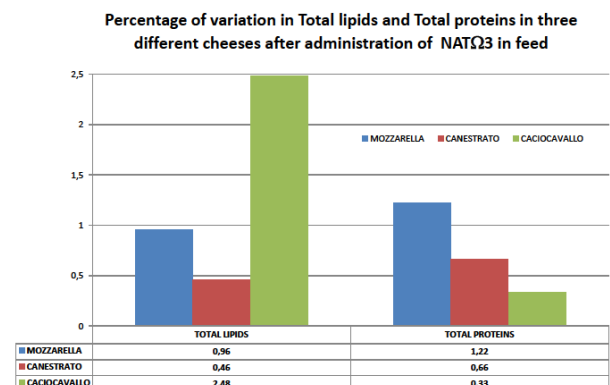
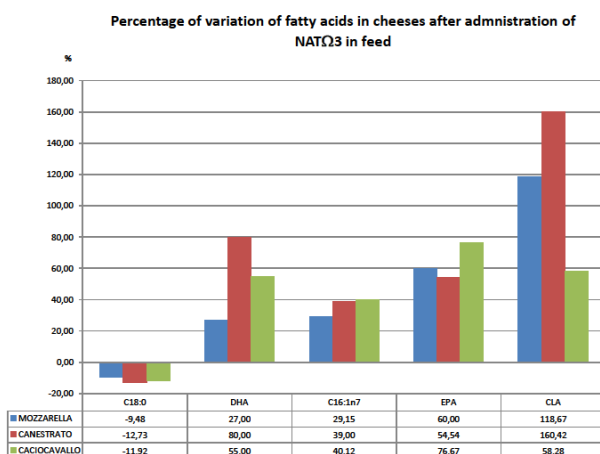
"Caciocavallo": total lipids +2,48%, total proteins +0,33%, CLA (C18:2) +58,28%, DHA (C22:6) + 55,00%, EPA (C20:5) +76,67%, palmitoleic acid (C16:1) +40,12%, decrease of stearic acid (C18:0) -11,92%.

This study is to demonstrate that lower quantity of NATΩ3 in feed (320 vs 600 g/subj./day) resolves in similar results: decrease in SFA and increase in PUFA: cis-9 18:1, CLA and DHA (see Fig. n. 1). Trend of metabolic parameters was confirmed especially for lipidic status. Another important data show the higher contents of proteins and lipids in the different cheeses respect to cheeses obtained by milk of control subjects (see Fig. n.2). The increase of lipids is connected to the higher presence of PUFA, as over reported, especially for "caciocavallo" cheese.

The content of PUFA in the cheeses studied show that the treatment of dairy cows with NATΩ3 gives a value of dietary Omega3 appreciated by consumers and greater revenue from the economic to the producer.

Fig. n. 1

Fig. n. 2



## CONCLUSION

The dietary supplement administered to dairy cows influences the composition of milk and cheese obtained, with enrichment of fatty acid fractions acting with a beneficial effect on human lipid metabolism and preventing the coronary heart disease. Moreover it was established that dosage of PUFA in feed can be reduced compared with the dose recorded in bibliography, as during 60 days of treatment at low dosage (320g/subj./day) the Authors noted that the content of lipids in milk and cheese is almost equal to that previously obtained with higher dosage (700g/subj./day). This phenomenon, probably, is due to the accumulation of PUFA in the tissue of dairy cows after supplementation.