

# THE EFFECT OF A BLEND OF NATURAL COMPOUNDS (NX-RH-201) ON THE QUALITY OF MILK PRODUCED ON A COMMERCIAL FARM UNDER NORMAL OPERATIONAL CONDITIONS.



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## BACKGROUND

Feed components have been shown to be closely linked to milk quality<sup>1</sup>. NX-RH-201 is a proprietary blend of natural compounds that modulates rumen fermentation to improve energy availability to the ruminant whilst reducing methane production.

## AIMS & METHODS

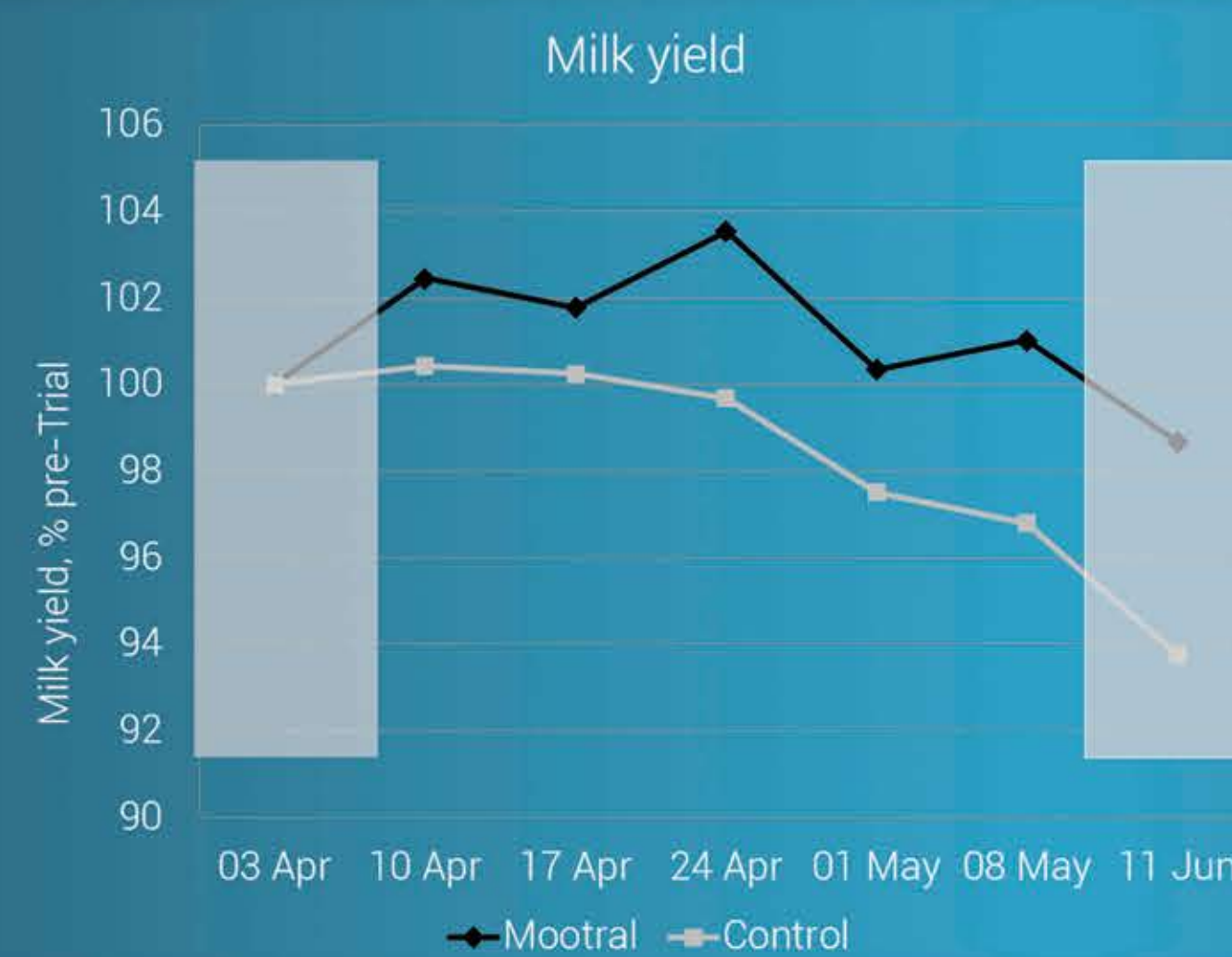
NX-RH-201's impact on milk quality and productivity was determined on a commercial farm, under normal operational conditions. 22 Friesland cows were randomly selected without matching for age, size, parity state or lactation phase. 9 cows each were assigned to the test and control group with 4 as replacements. Animals were adapted to the control concentrate for one week. Test feed was administered for 6 weeks with control concentrate administered over the same period.

Milk quality parameters measured included fat content and fat composition, sugars, proteins<sup>2</sup> and somatic cell count as per standard protocols<sup>3</sup>. Fatty acids were analysed by GC<sup>2</sup>.

## MILK YIELD

**Figure 1: Milk yield**

The milk yield in the NX-RH-201 group remained stable with a tendency of increased yield. While a decline of productivity in the Control group was observed. Productivity of cows was calculated as weekly mean during the course of the trial (unshaded area). Data from before and after the trial (grey shaded areas) is from the respective day and was recorded during monthly routine milk analysis. All data was normalised to a pre-trial time point.



## TOTAL FAT CONTENT

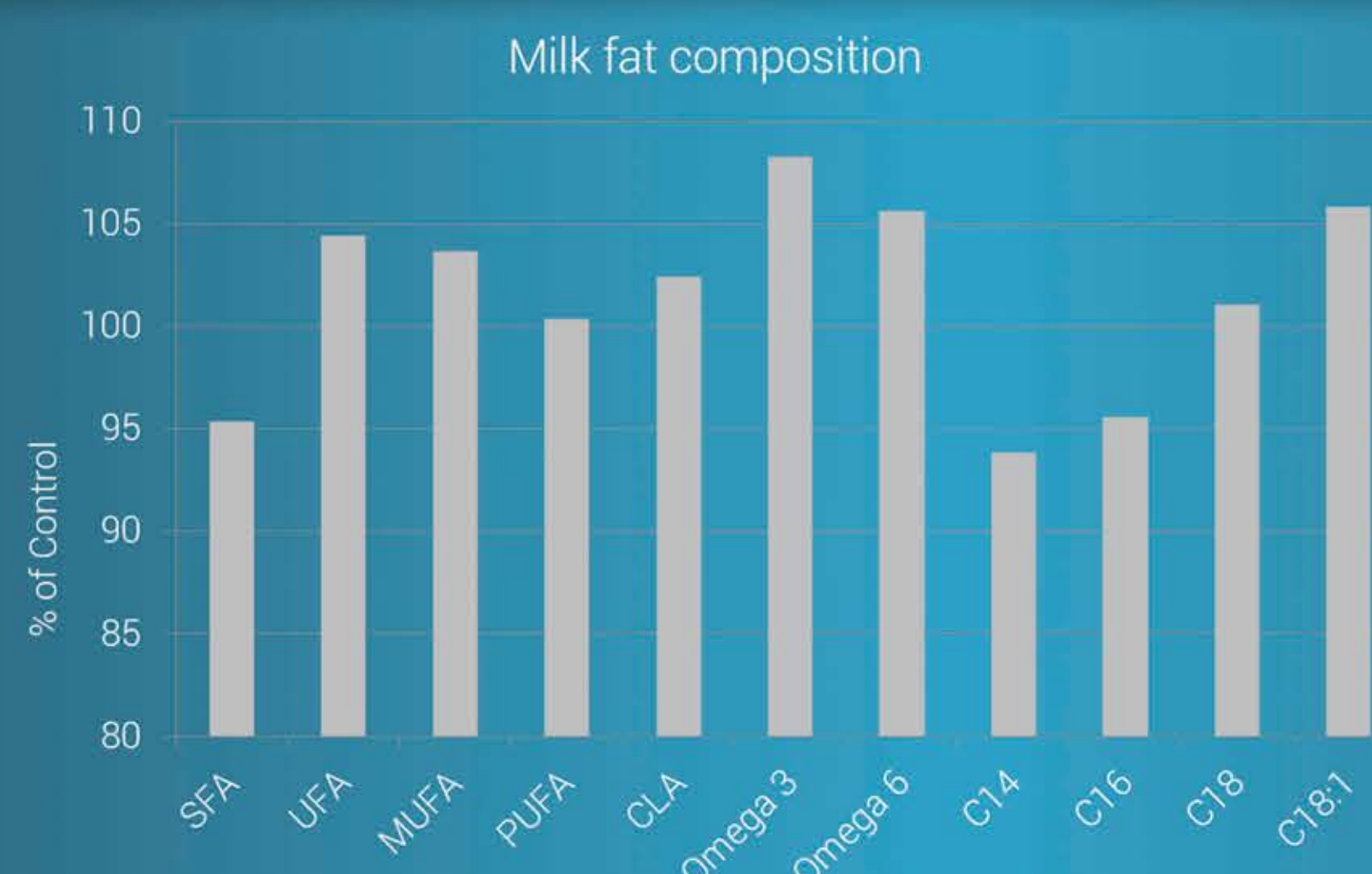
**Figure 2: Total fat content**

The milk fat content increases up to 10% in the NX-RH-201 group. There was no increase noted in the Control group. Total fat content of milk was analysed in regular intervals during the course of the study. Pre- and post-trial samples are marked with grey boxes. All data were normalised to a pre-trial time point.



## MILK FAT COMPOSITION

The saturated fatty acid content decreases in the NX-RH-201 group, whereas the content of unsaturated fatty acids increased compared to Control group. An increase of Omega 3 and Omega 6 fatty acids in the treated group was observed.



**Figure 3: Analysis of milk fatty acid composition**

Milk fat was further analysed for specific fatty acid composition in two laboratories. Data shown are mean values of samples taken over the course of the trial.

SFA: saturated fatty acids; UFA: unsaturated fatty acids; MUFA: monounsaturated fatty acids; PUFA: polyunsaturated fatty acids; CLA: conjugated linoleic acid.

## MILK FAT COMPOSITION

- NX-RH-201 has a positive influence on butyrate levels in milk which has been related to an increase in milk fat production<sup>4</sup>.
- A decrease in C14 and C16 fatty acids was detected, which is an indicator of reduced acetate production. This is positive in terms of productivity and methane production<sup>4</sup>.
- There is an increase in the production of stearic (C18) and oleic (C18:1) fatty acids by up to 5%, which has been positively correlated in literature to energy available for the cow's productivity (Figure 3).
- There is a decrease in saturated fatty acid content and an increase in unsaturated fatty acid content of the milk. Both mono- and polyunsaturated fats, when eaten in moderation and used to replace saturated or trans fats, can help lower cholesterol levels and reduce your risk of heart disease<sup>5</sup>.

## SUGARS & PROTEINS

No significant effect on lactose or milk protein production was noted.

## UDDER HEALTH

There is an overall decrease in somatic cell count in the treated cows when compared to the untreated control<sup>3</sup>.

## CONCLUSIONS

The increased productivity and fat content of the milk demonstrates the potential of the blend as an effective modifier of rumen fermentation.

The increase in mono- and polyunsaturated fats in combination with the decrease in saturated fats indicates beneficial impacts on the quality of milk.

The trial will now be repeated at a larger scale with matching for age, size, parity state and lactation phase.

## REFERENCES:

1: *British J of Nutrition* (1997) 78:S37-S47. 2: *J. Dairy Science* (2015) 98(1-):7277-7297. 3: <https://dairy.ahdb.org.uk>. 4: *J. Dairy Science* (2009) 92:5199-5211. 5: *Annals of Nutrition and Metabolism* (2015) 67:141-204