

# Feeding Chelbonit-16<sup>®</sup> to Lactating Dairy Cattle: Effects on Feed Intake and Milk Production

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## Introduction

Chelbonit is an Israeli-made nutritional supplement, developed at the Kinnarot Technological Incubator Project in Israel's Jordan Valley by Dr **Eliezer Smoler**, with the help of the Chief Scientist of the Ministry of Industry and Trade. The supplement is comprised of protected amino acids and enzymes that are released in a controlled manner in the rumen and intestinal tract. Previous unpublished trials of Chelbonit-16<sup>®</sup> (conducted in the Kibbutz Ein HaNatziv herd) showed an increase in milk and ECM (economy-corrected milk) production, while improving feed efficiency. The goal of this observation in the Kibbutz Messilot herd was to repeat, on a smaller scale, the results achieved in the previous trial.

## Methods and Materials:

Fifty-six cattle were divided into two groups, and housed in two small adjacent corrals. Half of the cows were near the end of their lactation (200 days or more from calving), and half were near the beginning of the lactation period (21–100 days from calving). The cattle were divided into groups based on number of lactations, lactation stage, and milk and ECM production prior to the trial. After the groups were separated for one week, Chelbonit was added to the ration. The supplement was added to the total mixed ration (TMR) of the experimental group as planned by nutritionist Dr. Ofer Kroll, according to the manufacturer's recommendation (9 grams/kg dry matter of feed). The supplement was added to the mixing wagon after the rest of the TMR had been distributed to the other cattle on the farm that received the same ration. Data collected throughout the trial included daily milk production statistics, gathered using the Afimilk automated milk monitoring system; information from three milk recordings, collected on days 3, 33, and 65 of the trial; body weight data, gathered using the scale system developed by SAE Afikim; and data regarding feed intake, which was taken from the hand-held feed control computer.

The milk and ECM data were analyzed using the PROC MIXED procedure of SAS Software. The fixed variables in the model included the lactation number, lactation stage, time from the beginning of the trial, and production potential. The impact of repeat measurements of the same cow was corrected using the model.

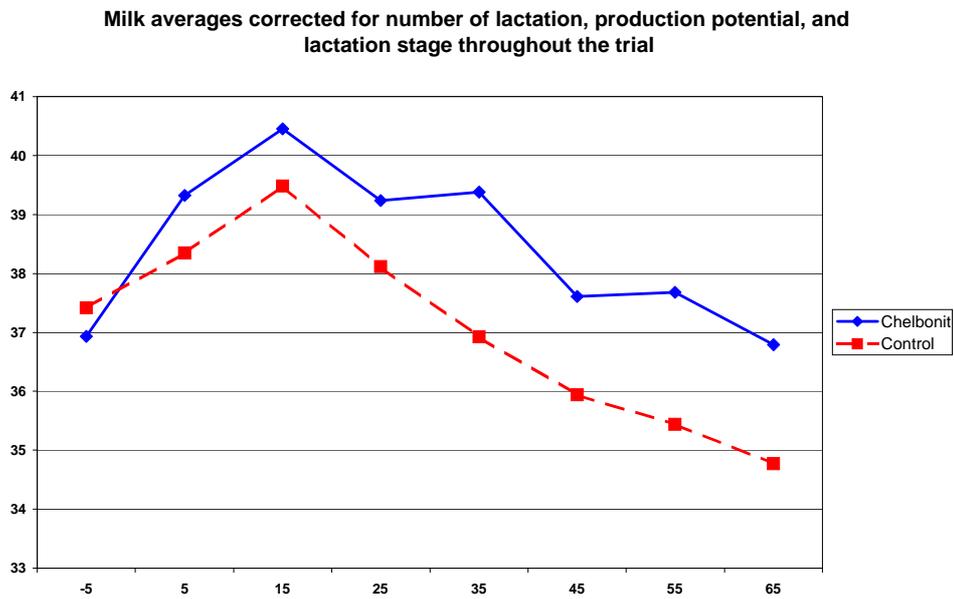
## Results

The average daily rates of milk, butterfat, protein, and ECM production, corrected for all factors in the model, are displayed in Table 1 and along a time axis in Graphs 1 and 2. A significant increase in milk and ECM production was noted. This increase reached its apex one month after the beginning of the trial, and increased production levels were maintained until the end of the experimental period. This difference was calculated by the analytical model to be 1.58 kg of milk ( $p < 0.03$ ) and 1.74 kg of ECM ( $p < 0.03$ ) for the entire trial period.

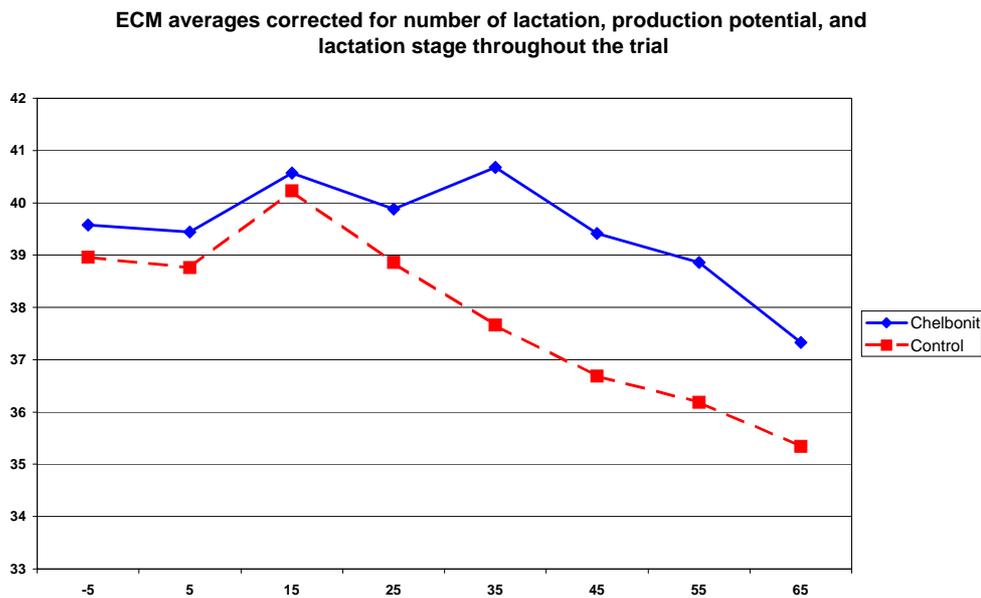
	Chelbonit Group	Control Group
Daily milk production, kg	38.5 ± 0.53	36.9 ± 0.53
Daily ECM production, kg	39.4 ± 0.58	37.6 ± 0.57
Butterfat%	3.50 ± 0.07	3.60 ± 0.07
Protein%	3.09 ± 0.04	3.03 ± 0.04

Table 1. Averages and Standard Deviations Corrected for the Analytical Model

### Graph 1: Milk Production During the Trial

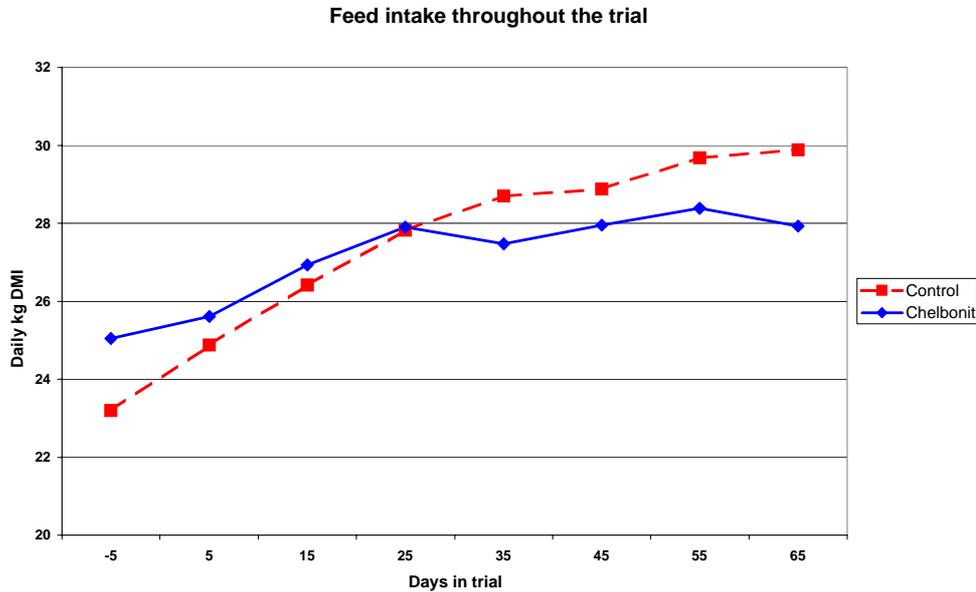


### Graph 2: ECM Production During the Trial



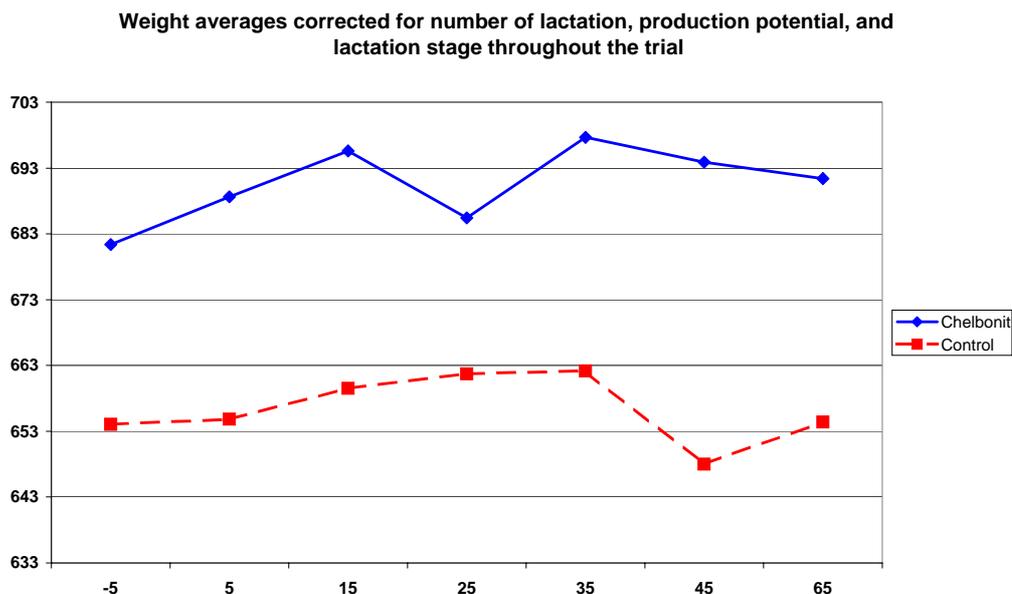
Graph 3 below describes the average feed intake per cow during the trial period. An increase in DMI is noticeable throughout the trial. The increase in the experimental group, however, is significantly more moderate.

### Graph 3: Feed Intake During the Trial



In the weight data, large data swings were recorded (the standard deviation is 20 kg). For a week, the scale was uncalibrated, and data from that period were discarded. It's clear from Graph 4 that the experimental group was on average 25 kg heavier than the control group even prior to the beginning of the trial. This weight difference was maintained throughout the length of the trial.

### Graph 4: Average Body Weights of the Cattle During the Trial



## **Summary**

Under the conditions of the trial, the addition of the Chelbonit nutritional supplement to the TMR of the lactating cattle was accompanied by a significant increase in milk and ECM production (more than 1.5 kg/day in each case). This additional milk production was achieved without a corresponding increase in dry matter intake, and without a significant change in the rate of milk solids and body weight. Because of its limited scope, this trial cannot accurately predict the effect the supplement might have on the milk production of cattle in different lactation stages, climatic conditions, feeding regimens, and management environments than those in this observation. Therefore, additional trials on a broader scope are needed to answer these questions.