

HUMAC® Natur AFM with a high content of **natural humic acids (65%)** is a natural feed material intended for all types of animals. The product is mixed into the feed as a preventive measure, which supports the reproductive indicators of animals, improves their production health and ensures the production of animal products without residues of foreign substances. It is also used to prevent and support the treatment of diarrheal diseases, dyspepsia and various intoxications. The natural humic acids in the product have the ability to bind various types of toxins, while simultaneously supplying minerals and trace elements in a chelated form that is easily usable in the animal's body. **The high efficiency of the product is ensured by the activation of the raw material** - humic substances by our own technological procedure. The product prepared in this way shows better biological effectiveness in the animal organism.



Activated natural humic acids play a key role in the detoxification of feed and the body of dairy cows due to their high adsorption capacity. They can bind toxic substances in the animal's digestive system (toxins, heavy metals, PCB substances, etc.) to their structure, which are then excreted in the feces. They support the immune system, activate metabolism and have an antiseptic effect. They stabilize the pH of the rumen, optimize digestive processes and support the reproduction and activity of symbiotic microflora. They have a significant impact on reducing the amount of somatic cells in the produced milk as well as improving its quality.

In 2020, the influence of humic acids as an organic preparation on milk parameters and the occurrence of mastitis in dairy cows was tested (Zigo et al., 2020). Experiments were carried out on crossbred dairy cows of Slovakian spotted cattle and red Holsteins. Fifty days before the expected calving date, the cows were randomly divided into two groups of 10 cows each, control and experimental. Cows in the experimental group were fed 100 g of HUMAC® per cow per day. Based on the obtained results, it can be concluded that **the addition of HA stabilizes the digestion of nutrients, which was also confirmed by the reduced content of urea in milk** in the supplemented group. Their indirect beneficial effects **improved the development of immune reactions, which resulted in a decrease in the number of somatic cells and the occurrence of mastitis** caused by coagulase-negative staphylococci.

Table 1. The effect of HUMAC® Natur AFM on the number of somatic cells in milk

	on the 10th day of lactation			on the 30th day of lactation		
	Control	HUMAC® Natur AFM	Change	Control	HUMAC® Natur AFM	Change
SCC (10 ³ /ml)	425,30	358,14	- 15,79 %	384,42	331,60	- 14,00 %

This study was conducted in 2021 on a commercial dairy farm raising only Holstein-Friesian cows (Teter et al., 2021). Sixty-four cows were selected from a herd of 150 based on the number of lactations (first or second) and stages of lactation (between 35 and 120 days, on average 75). The selected cows (with an average weight of 632 kg and milk yield 36.41 kg) were randomly divided into two groups and fed either a control diet without feed admixture or an experimental diet containing **HUMAC® Natur AFM in the amount of 100 g/day** (with gradual familiarization of the cows during one week).

Table 2. The effect of HUMAC® Natur AFM in milk production and its parameters

	after 30 days			after 60 days		
	Control	HUMAC® Natur AFM	Change	Control	HUMAC® Natur AFM	Change
Milk production (kg)	38,51	38,47	- 0,10 %	38,65	39,46	+ 2,10 %
Fat (%)	3,67	3,84	+ 4,63 %	3,66	3,93	+ 4,92 %
Proteins (%)	3,27	3,35	+ 2,45 %	3,30	3,44	+ 4,24 %
Casein (%)	2,60	2,67	+ 2,69 %	2,61	2,73	+ 4,60 %
Lactose (%)	4,87	4,83	- 0,82 %	4,82	4,76	- 1,24 %
Dry matter (%)	12,51	12,76	+ 2,00 %	12,47	12,85	+ 3,05 %
SCC (10 ³ /ml)	258,88	225,83	- 12,77 %	261,08	208,45	- 20,16 %

Table 3. The effect of HUMAC® Natur AFM on the mineral content of milk after 60 days

	Control	HUMAC® Natur AFM	Unit	Change
Calcium (Ca)	1104,84	1253,23	mg/kg	+ 13,43 %
Sodium (Na)	348,69	387,91	mg/kg	+ 11,25 %
Magnesium (Mg)	107,06	109,79	mg/kg	+ 2,55 %
Iron (Fe)	0,32	0,43	mg/kg	+ 34,38 %

Table 4. The effect of HUMAC® Natur AFM rennet parameters

	After 30 days			After 60 days		
	Control	HUMAC® Natur AFM	Change	Control	HUMAC® Natur AFM	Change
Brittleness (N)	3,60	3,75	+ 4,17 %	3,60	4,18	+ 16,11 %
Hardness (N)	3,62	3,84	+ 6,08 %	3,56	4,36	+ 22,47 %
Adhesion (N)	1,69	1,91	+ 13,02 %	1,62	2,03	+ 25,31 %
Flexibility	2,06	1,59	- 22,82 %	2,02	1,59	- 21,29 %
Rubberiness (N)	0,42	0,44	+ 4,76 %	0,43	0,46	+ 6,98 %
Chewiness (N)	0,79	0,75	- 5,06 %	0,89	0,74	- 16,85 %
Cohesion (mj)	0,12	0,12	0 %	0,13	0,10	- 23,08 %

The obtained results indicate that the use of HUMAC® Natur AFM in the amount of **100 g per cow per day did not affect the productivity** of the cows. However, **it had a positive effect by increasing the content of protein, casein and fat in milk and reducing somatic cells**, but only after 60 days of use. After this period, higher calcium and iron contents were also observed in milk. At this time, there was also an **improvement in the texture parameters** (higher hardness and lower brittleness values) **of the rennet curd obtained from the milk** of cows fed HUMAC® Natur AFM. Favorable changes in milk coagulation parameters (shorter coagulation time, shorter time to reach the specified curd stiffness and increased curd stiffness) were observed after 30 days of using HUMAC® Natur AFM and lasted until the end of the experiment. The results of the study indicate that the suitability of milk for cheese production can be improved by introducing HUMAC® Natur AFM into the cow's diet.



Natural animal feed material with activated humic acids

Product application in dairy farming

Recommended dosage of HUMAC® Natur AFM for dairy cows

100 - 150 g / day / piece



The activated natural humic acids in the product are mixed into any feed that can be fed immediately. They are indigestible and after ingestion pass through the digestive tract, where they have a positive effect on many processes in the body. We recommend applying the product year-round, as it has a preventive effect, especially on diarrheal diseases, and improves the animals' immunity and welfare in the long term. For health problems (diarrhea, etc.), increase the daily recommended amount by 2-3 times for at least 5 days. The preparation has no known side effects or contraindications, however we recommend keeping a two-hour interval between administration of the veterinary medicine. The product has no shelf life.

Economics of the HUMAC® Natur AFM product in dairy farming

An increase in daily gains (by 8%), better feed conversion (by 7%) and a reduction in deaths (by 50%) will ensure a return on the cost of purchasing the product. The overall improvement in health will reduce the need for veterinary drugs.

HUMAC® Natur AFM is suitable for use in organic agriculture for the production of organic food



HUMAC® - Natural humic acids activated for a healthy life

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