

Efficiency and costs of the health management in an organic dairy farm where we use unconventional medicines

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Abstract – The EU organic regulation explicitly promote the use of unconventional therapies, like homeopathy and phytotherapy. The aim of the present study was to investigate the efficiency and the costs of these treatment methods. From December 2006 to September 2008, we analyzed the data recorded in an organic dairy farm where the animals are normally treated by classical unicistic homeopathy and phytotherapy, and only when indispensable, by allopathy, antiparasitic drugs, surgery and vaccines. The use of homeopathy resulted to be predominant in comparison with the others treatments. Besides, our trial showed that homeopathy and phytotherapy could be used to treat, with good outcomes, the majority of diseases that occur in a dairy cattle farm, even if, sometimes, conventional medicines have to be used. The costs for unconventional treatments are very low in comparison with conventional ones. This will allow the spreading of unconventional medicines in the Italian organic farms.

Key words: Homeopathy, Phytotherapy, Allopathy, Organic dairy cattle farm

Introduction – The EU regulation sets standards for treatment of diseased animals in the member countries of EU (Commission Regulation (EC) n. 1254/2008). The intention of these regulation is to use as little as possible traditional veterinary medicines. Besides, the EU regulation explicitly promotes the use of holistic oriented therapies, like homeopathy and phytotherapy (Pignattelli and Martini, 2007). The ideas and philosophy of some of these treatment methods seem to be in accordance with the ideas of organic agriculture. Indeed, the use of medical substances obtained from natural sources can avoid the use of chemicals that may be harmful to the environment (Vaarst *et al.*, 2004). On the other hand, tradition, lack of knowledge and education and farm structure in many parts of Europe limit the use of these treatment methods. Many farmers have doubts on the efficiency and the costs of homeopathy and phytotherapy (Martini *et al.*, 2000a, 2000b, 2001) The aim of present study was to investigate these aspects.

Material and methods – From December 2006 to September 2008, a trial was carried out on Cooperativa Emilio Sereni. This farm is a dairy production tenancy co-operative (whose members are salaried), which has operated as a certified organic farm since its conversion, which took place between 1992 and 1995. At the time when the trial was conducted, 280 Italian Holstein cows were kept in the farm, in a loose, open housing system, and daily milk production was about 3.5 tons. The average milk quality parameters were: 3.55% fat, 3.13% protein and 200,000 somatic cells/ml. A veterinary homeopath, who was involved in our research group, visited the animals every fifteen days, controlling the health status and prescribing the treatments, that were often subcutaneously administered by a stockman expert in homeopathy. Animals were treated by the classical unicistic homeopathy (HOM) (Kent and Ullman, 1979), but, when it was indispensable, and according with

limits of EU regulation, allopathy (ALL), antiparasitic drugs (APD), surgery (SUR), phytotherapy (PHY) and vaccines (VAC) were used. During the experimental period, data concerning treatments and diseases of the animals were recorded daily, using the Cincinnato software (Italservice S.r.l. Cremona, Italy). In this work we split diseases in 3 categories: diseases of genital apparatus (GAD), diseases of mammae and related pathologies (e.g. puerperal collapse) (MRD) and diseases of the other apparatuses (e.g. digestive and respiratory) (OAD). Furthermore, the results of treatments (eliminated, recovered, dead and recidivist), the duration of medical treatments and the characteristics of ill animals (daily milk production, number of calving) were recorded on the farm database. Costs of medical treatments were calculated considering: cost of work, cost of remedies and medicines and their administration modality, cost of external services, and respective economic results. The 22 months trial data were analyzed using SAS (SAS, 2002). Nominal data (type of disease, type of medical treatments used and results of treatment) were analyzed by Contingency analysis, while continuous data (animals' characteristics and calculated costs) were analyzed by one way ANOVA with type of medical treatments used as fixed factor. Different means were analyzed by Student's t test.

Results and conclusions – In table 1 we report the results of the Contingency analysis regarding the type of medical treatments used to cure the 3 groups of diseases considered. The use of HOM seemed to be predominant on the treatments of GAD and MRD. PHY seems to be preferred to ALL in the treatments of MRD. ALL was utilized more than other medical treatments for OAD, but this category represented only 18.07% of the whole diseases (table 1).

Table 1. Contingency analysis: type of disease by type of medical treatments used (n. and %).

Glr= 2071		ALL	APD	SUR	PHY	HOM	VAC.	Tot.
GAD	n.	219	0	82	6	807	0	1114
	%	19.66	0	7.36	0.54	72.44	0	100
MRD	n.	40	0	0	77	478	0	595
	%	6.72	0	0	12.94	80.34	0	100
OAD	n.	202	13	3	18	98	43	377
	%	53.58	3.45	0.80	4.77	25.99	11.41	100

RSquare= 0.1826; Pearson test: ChiSq 792.919 P≤0.0001.

In table 2 we report the results of the Contingency analysis regarding the efficiency of the medical treatments used. Concerning the incidence of recovered animals, PHY and HOM treatments had a better outcome than ALL. Mortality seemed to be considerably low and on line with other dairy cattle farms with similar characteristics (Bertani *et al.*, 2005). The incidence of relapses resulted similar for HOM and ALL, it was lower in PHY (Table 2).

Table 2. Contingency analysis: type of medical treatments used by results of treatment.

Glr=2066		ALL	APD	SUR	PHY	HOM	VAC.
Eliminated	n.	18	0	3	4	48	1
	%	3.90	0	3.53	3.96	3.47	2.33
Recovered	n.	356	13	55	81	1095	42
	%	77.22	100	64.71	80.20	79.18	97.67
Dead	n.	6	0	1	3	4	0
	%	1.30	0	1.18	2.97	0.29	0
Recidivist	n.	81	0	26	13	236	0
	%	17.57	0	30.59	12.87	17.06	0
Total	n.	461	13	85	101	1383	43
	%	100	100	100	100	66.30	100

RSquare=0.0109; Pearson test: ChiSq 40.070 P≤0.0004.

Regarding the results of medical treatments by type of disease, the percentage of eliminated animals was similar in the 3 categories analyzed (mean $3.47 \pm 0.29\%$). The percentage of recovered animals was greater than 85% for MRD and OAD categories and it was lower for GAD (72.71%). Anyway, the highest incidence of recidivist animals was observed in this latter category (23.25%), while the highest incidence of dead animals was observed for OAD (2.12%). Considering the characteristics of ill animals and the type of medical treatments, milk yield of treated animals was high (more than 32 kg/head/day), demonstrating the high productivity of this organic farm, in comparison with other farms with similar characteristics (Bertani *et al.*, 2005). The age of the ill animals, computed as number of calving, appeared considerably high, considering that the longevity farm rate was 3.09 ± 2.11 calving, and even significantly ($P \leq 0.05$) higher for the animals treated with PHY (3.88 ± 0.20) than those treated with ALL (2.36 ± 0.10). In table 3 we report the results obtained from the analysis of the duration of treatments and their costs. The duration of treatments was significantly lower for ALL than HOM. The high value observed for APD could be due to the time required for sulphamidic treatments against coccidiosis that need of six days treatment. Costs analysis showed that HOM and PHY were significantly cheaper than ALL and APD. In particular, the costs of HOM was approximately 1/2 of ALL (Table 3).

Table 3. Duration of medical treatments and calculated costs by type of medical treatments.

Glr=2080	sign	ALL	APD	SUR	PHY	HOM	VAC.
Duration of medical treatment	days	*** 1.28 ^B	2.92 ^A	1.12 ^C	1.15 ^{BC}	2.96 ^A	1.0 ^C
Treatment costs	€	*** 18.54 ^A	17.16 ^A	12.91 ^B	12.09 ^B	9.88 ^C	9.36 ^C

***= $P < 0.001$. Means within a row lacking a common capital letter differ $P \leq 0.05$.

In conclusion, this work shows that HOM and PHY could be used to treat, with good outcomes, the majority of the diseases that occur in a dairy cattle farm, even if, sometimes, conventional (ALL, APD, SUR, VAC) medicines have to be used. But, the most relevant result is that the costs for unconventional treatments are very low in comparison with conventional ones, and it would allow the spreading of HOM and PHY in the Italian organic animal farms in the future.

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