Homeopathy (2016) 105, 102–108
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http://dx.doi.org/10.1016/j.homp.2015.08.005, available online at http://www.sciencedirect.com

ORIGINAL PAPER

Use of homeopathy in organic dairy farming in Spain

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Organic farming principles promote the use of unconventional therapies as an alternative to chemical substances (which are limited by organic regulations), with homeopathy being the most extensive. Traditionally, Spain has had little faith in homeopathy but its use in organic farming is growing. Fifty-six Spanish organic dairy farmers were interviewed to obtain what we believe to be the first data on the use of homeopathy in organic dairy cattle in Spain. Only 32% of farms use some sort of alternative therapy (16.1% homeopathy, 10.7% phytotherapy and 5.3% using both therapies) and interestingly, a clear geographical pattern showing a higher use towards the East (similar to that in the human population) was observed. The main motivation to use homeopathy was the need to reduce chemical substances promoted by organic regulations, and the treatment of clinical mastitis being the principle reason. The number of total treatments was lower in farms using homeopathy compared with those applying allopathic therapies (0.13 and 0.54 treatments/cow/year respectively) and although the bulk SCC was significantly higher ($p < 0.001$) in these farms (161,826 and 111,218 cel/ml, respectively) it did not have any negative economical penalty for the farmer and milk quality was not affected complying with the required standards; on the contrary homeopathic therapies seems to be an alternative for reducing antibiotic treatments, allowing farmers to meet the organic farming principles. *Homeopathy* (2016) **105**, 102–108.

Keywords: Dairy cattle; Homeopathy; Organic farming; Somatic cell count

Introduction

Organic farming promotes a combination of providing good-quality feedstuffs, appropriate livestock husbandry systems, reduce the use of chemical products in favor of alternative therapies, and correct management practices to deal with the principles of health, ecology, fairness and care.[1] In USA, the USDA Organic Standard prohibits antimicrobial drugs for organic dairy cows,[2] and their use leads to the loss of the organic status of an animal. The organic EU legislation limits, but does not prohibit, the use of antibiotics, although it explicitly states that alternative treatments, homeopathy and phytotherapy, should be used in preference to antibiotics.[3] However, within each country the level of application of homeopathy is different and greatly depends on the human tradition of their use: while in UK homeopathy is commonly used in organic farms as an antibiotic alternative,[4] in Sweden the organic regulation do not advocate alternative medicine over conventional veterinary medicine.[5] One of the biggest problems of the indiscriminate use of antibiotics is the development of resistances which have a negative impact in human health; in fact, World Health Organization speaks about a post-antibiotics era.[6]

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Received 10 October 2014; revised 17 July 2015; accepted 13 August 2015

Alternative therapies are a collective term encompassing numerous therapies which vary widely in their theoretical basis, practice and use.[7] One definition of alternative therapies is diagnosis, treatment or prevention which complements mainstream medicine by contributing to a common whole, satisfying a demand not met by orthodoxy or diversifying the conceptual framework of medicine.[8] Within alternative therapies, homeopathic is one of the most extensive in organic farming.[7] In cattle one of the most common applications is in the mastitis treatment[4,9–17] due to the economical importance and the restrictions in the use of antibiotics. Mastitis is a serious animal welfare problem and causes losses to producers through reduced yield and the cost of treatment.[18,19] The presence of high somatic cell count (SCC) in individual cows indicates subclinical levels of mastitis.[20] As farmers are penalized for having high SCC in the bulk tank, the reduction of SCC below the penalty level at the herd level is a goal in its own right for farmers.[21]

However, despite homeopathy being promoted by international organizations as an alternative to chemical substances in organic farming, the results of its effectiveness at the farm level are contradictory: whereas some authors have found an effect in farms with homeopathic treatments,[10,13,15–17] other studies did not find any differences.[9,11,12] This non-consensus could be explained because there are differences in management routines between organic and conventional farms and it might also differ between studies.[5] A recent experimental study in herds with mild to moderate clinical mastitis indicates that cows treated with homeopathy showed significantly higher SCC than those treated with antibiotics.[16] When efficiency of homeopathy is compared with a placebo in cows suffering subclinical mastitis, Kiarazm et al.[22] found a significant decrease of the SCC and a reduction of the incidence of the disease in the group receiving homeopathy, even though Holmes et al.[12] did not find any significant effect of the treatment.

Spain has a poor tradition of using homeopathy although its use as an alternative therapy in the human population has been increasing over the last few years (33% of the population regularly use homeopathy) with a high degree of satisfaction among the new users (82% of patients are satisfied or very satisfied with the outcome of their treatment).[23] The use of homeopathy in veterinary medicine has been traditionally circumscribed to the pets of homeopathy-user-owners,[7] although in recent years it has been largely extended to organic dairy farming, because of its advantages (no limitations of use, no milk residues using very low doses), compared to antibiotics, even though within the dairy sector little is known about its use and effectiveness. The objective of this paper is to present what we think is the first data of the use of homeopathy in organic dairy cattle in Spain. A second objective was to compare the productive and sanitary situation of organic dairy farms using homeopathy with those using allopathic therapies.

Material and methods

Data on which this paper was based was collected within a research project (Spanish Government Ref. AGL 2010-21026) to evaluate the nutritional and sanitary situation of organic dairy cattle in Northern Spain in comparison with conventional production systems. This project involves all (n = 56) organic dairy farms of the North of Spain representing nearly the 80% of organic milk production in Spain.[24]

Organic farmers were interviewed in qualitative semi-structured research interviews from February to April 2011. All interviews were performed by the same researcher (F. Rey Crespo) with the person responsible for the farm management, and included detailed information about different productive and sanitary aspects.

Veterinary treatments were collected during interviews from the treatment's cards of each farm to obtain all treatments used during 2011. For each farm, SCC was monthly evaluated in bulk milk tank during 2011. Data were obtained from the Dairy Control Records and were performed using flow cytometry.

All statistical analyses were done using the program SPSS for Windows (v.20.0). Normal distribution of data was checked using a Kolmogorov–Smirnov test. Data was not normally distributed; therefore differences between organic dairy farms using homeopathy or allopathic therapies on productive and sanitary parameters were analyzed by using the nonparametric Kruskal–Wallis test and data expressed as medians.

Results

Summarized productive and sanitary data of the 56 organic dairy farms in this study are presented in Table 1. Overall, organic farms have a mean size of 34.8 milking cows (ranging from 2 to 207) and a mean milk production of 18.5 litres/day (ranging from 11 to 32). Only 18 of the 56 farms in our study (32%) used some alternative medical therapies, 9 (16.1%) farms used homeopathy, 6 (10.7%) phytotherapy and 3 of them (5.3%) used both therapies. The use of homeopathy showed a clear geographical pattern, with a higher use towards the East (Table 1). The profile of the farms that used homeopathy, in terms of size (median milking cows = 31.7; Table 2) and production level (19.3 litres/day) did not statistically differ ($p > 0.05$) from those using allopathic treatments (32.1 milking cows and 18.4 litres/day respectively).

When asking about the reasons for using homeopathy (Figure 1), the main motivation (44%) underlying the farmers' decision was the European organic regulations. Another important reason (24%) was the reduction of antibiotic treatments based on the risk of developing microorganism resistance. In this sense, farmers explained that conventional treatments did not always meet their needs, mainly the use of antibiotics to treat mastitis. To have a homeopathic veterinary doctor (21%) was also important since in our study only one farmer had homeopathic training to deal with. When asked about the general satisfaction with homeopathy, we found that 10 of 12 farmers (83%) declared to be satisfied or very satisfied and the effectiveness of treatment being the main reason to continue using homeopathy.

Table 1 General data of organic farms in our study

*Herd**	*Milking cows*	*Milk yield (L/cow/year)*	*Bulk SCC (×10³)†*	*Dairy control record (DCR)*	*Alternative therapies‡*	*Veterinary treatments (no treatments/cow/year)*	
						All diseases	*Clinical mastitis*
1	42	13.0	108	NO	NO	0.00	0.00
2	9	18.0	113	NO	NO	0.78	0.00
3	207	18.5	89	YES	P	0.87	0.02
4	30	17.0	123	NO	NO	1.53	0.40
5	30	25.0	122	YES	P	0.90	0.10
6	30	21.0	154	YES	NO	0.57	0.00
7	40	20.0	119	NO	NO	0.95	0.15
8	35	14.0	102	NO	NO	0.00	0.00
9	12	21.0	99	NO	NO	0.00	0.00
10	2	17.0	No data	NO	NO	0.00	0.00
11	7	14.8	100	NO	NO	0.14	0.14
12	4	13.0	165	NO	NO	0.00	0.00
13	3	19.0	141	NO	NO	0.00	0.00
14	32	18.0	167	NO	H§	1.50	0.30
15	23	14.7	142	NO	NO	0.78	0.02
16	25	21.0	123	NO	NO	0.12	0.12
17	34	17.0	90	YES	NO	0.88	0.15
18	56	20.0	133	YES	NO	0.75	0.05
19	47	19.2	94	NO	NO	0.62	0.30
20	30	23.0	94	YES	NO	0.67	0.00
21	40	13.0	132	NO	NO	0.83	0.03
22	111	20.0	101	YES	NO	0.96	0.40
23	70	21.0	98	YES	NO	0.00	0.00
24	70	22.4	98	YES	NO	0.17	0.03
25	48	19.6	182	YES	P	0.92	0.02
26	21	18.0	109	NO	NO	1.24	0.14
27	17	22.0	No data	NO	NO	0.00	0.00
28	20	18.0	90	NO	NO	0.85	0.30
29	60	19.7	116	NO	NO	0.08	0.00
30	42	11.0	156	NO	NO	0.02	0.00
31	32	20.0	114	YES	NO	1.09	0.00
32	22	17.0	80	NO	NO	1.00	0.09
33	42	21.0	149	YES	NO	0.12	0.10
34	8	21.3	50	NO	NO	0.63	0.50
35	32	25.0	90	YES	NO	0.67	0.02
36	21	13.7	96	NO	NO	0.00	0.00
37	20	23.0	120	YES	NO	0.50	0.05
38	40	18.0	151	YES	NO	0.10	0.00
39	66	21.6	116	YES	NO	0.06	0.05
40	50	18.0	101	YES	P	0.16	0.16
41	28	19.6	108	NO	NO	0.64	0.43
42	39	18.0	132	YES	H§	0.05	0.03‖
43	20	18.7	170	YES	H.P	0.60	0.45‖
44	20	13.1	117	NO	H.P§	0.00	0.00
45	20	21.0	128	NO	H.P§	0.90	0.30
46	38	32.0	140	YES	H	0.11	0.03
47	6	18.0	121	YES	NO	0.67	0.00
48	50	13.0	187	NO	H§	0.00	0.00
49	24	13.0	105	YES	NO	0.00	0.00
50	11	18.0	105	YES	P	0.00	0.00
51	37	14.0	125	NO	P	0.08	0.03
52	29	20.0	181	YES	H§	0.31	0.03‖
53	38	17.2	182	YES	H§	0.00	0.00‖
54	30	19.0	141	YES	H§	1.27	0.33‖
55	8	16.5	168	YES	H§	0.13	0.00‖
56	21	19.7	169	YES	H§	0.19	0.19‖

* Farms are ordered from West to East.
† Mean farm value in 2011.
‡ P:phytotherapy, H:homeopathy.
§ Farms with DVM with knowledge in alternative medicine.
‖ Farms using only homeopathic treatments for mastitis (farms 53 and 55 did not use any treatment for mastitis in this period).

The number of veterinary treatments (expressed as number of treatments/cow/year, Table 2) was lower in farms using homeopathy (median value: 0.13 treatments/cow/year) compared with those using allopathic treatments (0.54 treatments/cow/year). When classifying the treatments by pathologies (Table 3) it was observed that whereas in farms using allopathic therapies most of them (68.4 %) are used to reduce SCC at the end of lactation (dry period), in those using homeopathy mastitis is their main target (26.3%). Within the farms that use homeopathy, all of

Table 2 General data of farms split by type of treatments used

Type of herd	*Milking cows*	*Milk yield (L/cow/year)*	*Bulk SCC ($\times 10^3$)*	*Veterinary treatments (no treatments/cow/year)*	
				All diseases	*Clinical mastitis*
Allopathy	32.1	18.4	111	0.54	0.02
Homeopathy	31.7	19.3	162	0.13	0.03
Homeopathy and phytotherapy	20.0	17.6	137	0.60	0.30
Phytotherapy	63.8	18.9	117	0.52	0.03
Total	34.8	18.5	120	0.25	0.03

Milking cows and milk yield: mean; Bulk SCC: geometric mean; treatments: median.

them apply allopathic therapies to some extent (Table 4); for pathologies as lameness, metritis, placent retention and hypocalcemia, and most (67%) use therapies to reduce SCC at end of lactation (dry period) implementing allopathic treatments.

When was compared bulk SCC in both types of farms, it was observed statistically significantly ($p < 0.001$) higher SCC in farms using homeopathy (median value: 161,826 cel/ml) compared with those using allopathic conventional treatments (111,218 cel/ml) (Table 2).

Discussion

Overall, when compared to the Spanish conventional sector, organic farms have a similar size (36.6 milking cows) even though milk production was 22.4% lower.[25] Similar results have been reported in other literature[26,27] and are associated with a lower level of concentrate intake in organic farms.[28–30]

The use of alternative therapies (32%) showed a geographical pattern similarly that it was found in a recent study on the use of homeopathy in the Spanish population,[23] where also it was showed that alternative medicine is more frequent in Eastern Spain, which probably indicates that the population shows a higher degree of confidence towards such therapies. A similar parallelism between the use of alternative treatments in humans and animals have been found in other countries; for example, the use of homeopathy in farm animals is higher in the UK, where nearly half of the population is expected to use one or more alternative therapies in their lifetime,[31] unlike the study in Norway, where only 12% of population use homeopathy.[32] Moreover, homeopathy has not been the only alternative therapy used in the farms studied: some farms have used phytotherapy in their animals, even making a combination between homeopathy and phytotherapy (n = 3). Council Regulation (EC) No 834/2007 encourages the use of alternative therapies, limiting the use of antibiotics where only necessary

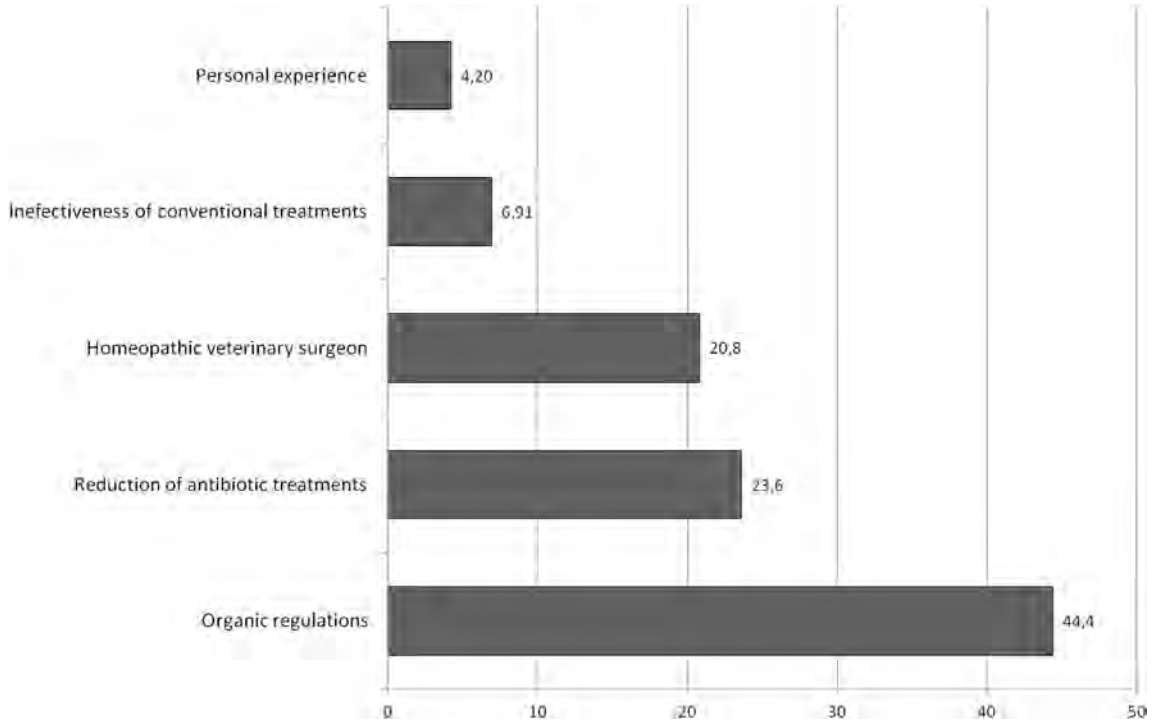

Figure 1 Graphic showing the reasons to use homeopathic treatments in organic farms in Spain. Expressed over the total number of answers (n = 20) and considering that farmers (n = 12) could choose one or more options.

Table 3 Comparison of the frequency of treatments (expressed as the percentage of the total) of the main pathologies in farms that use homeopathic and allopathic treatments

Diseases	*Farms with homeopathic treatments (n = 12)*	*Farms with allopathic treatments (n = 44)*
Mastitis	26.3	16.9
Anoestro	25.0	1.84
Dry off	22.4	68.4
Other diseases*	26.3	12.8

* Lameness, metritis, placent retention, hypocalcemia.

and under strict conditions.[3] Specifically, antimicrobials can be used in acute cases, but the withdrawal period for sale of milk is longer on organic farms than for nonorganic farms (double time), and cows are allowed to be treated no more than 3 times during one lactation to maintain the organic status.[3]

As in our study, in Norway, Hektoen et al.[9] described that antibiotic resistance was the main concern to organic farmers, and was one of the main motivations to use homeopathy treatments, together with cost reduction. In the same way, Werner et al.[16] in a trial about mastitis management found that the cure rates of both antibiotic and homeopathic treatments were low, revealing limitations in the effectiveness of the treatment strategy. Moreover, unlike our results, in a Norwegian study it was observed that two-thirds of farmers had personal experience with homeopathy.[33] Farmers using homeopathy seem to be satisfied with its effectiveness, similarly to the results found to Hektoen et al.,[9] who reported that only one of 18 Norwegian farmers investigated had discontinued using homeopathy because he could not 'make it work'.

Mastitis also represents the main use of homeopathy in organic herd in other European countries, and as previously indicated it is largely used in countries such as the UK (56% of cases of clinical mastitis are treated with homeopathy[4,34]) or Germany[35] (34–51%) while in others, such as Ireland[36] (22%) or Sweden its use is low (only 6 of 26 farmers used homeopathic remedies to a varying extent being mastitis the less commonly pathology treated with homeopathy).[28] In spite of the dry off strategy of farms using allopathic therapies, the incidence of clinical mastitis was similar in both types of farms (median treatments 2 and 3 % in farms using allopathic and homeopathy therapies respectively, Table 1). Our results indicate that the *sanitary strategy* of organic farmers using allopathic therapies is closer to the conventional philosophy where farmers use preventive treatments, as dry off. In fact, a national survey of conventional dairy herds in USA found that more than 75% of conventional farmers used intramammary dry cow therapy in all cows,[37] similarly to 68% of organic farms using allopathic treatments found in our study. In the other hand are farmers that use homeopathy (22%) who are more conscious of the need of a reduction in the number of treatments in organic production.

The lower number of conventional treatments (including antibiotics) to treat mastitis and the low use of dry off strategies seems to have an effect on the milk SCC—higher in farms using homeopathy—the main marker of the sanitary status of the farm. In spite of the bulk SCC in farms using homeopathy—and consequently the udder health—was slightly worse than using conventional treatments, the average of SCC in both types of farms was far from the threshold (400.000 cel/ml) from which farmers are penalized. In this sense, some economic analyses have indicated that net profits of farms with both types of management routines are similar.[38,39] Considering that the main principles of the organic farming are the reduction of chemicals substances,[1] and that the use of antibiotics in dairy production is the main factor in the development of antibiotic resistance[40] (a public health problem[41]), the use of homeopathy seems to be a good alternative, at least in the conditions of organic farms in Northern Spain. In addition, we found a similar incidence of clinical mastitis in the herds; therefore do not seem to be a relevant animal welfare issue. Moreover, homeopathy is cheaper than conventional treatments[15,42,43]; the management of the cows treated with antibiotics is laborious and also wastes milk (1–4% of the total milk production) during the withdrawal period,[44,45] which generates serious losses for the farmers. Finally, waste milk is used in calf feeding programmes, and this usage is controversial because it could contain antibiotic residues.[46]

Conclusions

The use of homeopathy in organic farms in Spain is low compared with other European countries, probably due to the poor homeopathic tradition in human medicine. However, farmers said they are very satisfied with its results. The main motivation for their use is the need to reduce

Table 4 In farms that use homeopathic treatments (n = 12): comparison of the use of homeopathic and allopathic therapies (expressed as % of farms) for the main pathologies

Diseases	*Type of treatment*		
	Homeopathic	*Allopathic*	*Homeopathic + Allopathic*
Mastitis	63	12	25
Anoestro	67	33	0
Dry period treatments	33	67	0
Other diseases*	0	100	0

* Lameness, metritis, placent retention, hypocalcemia.

chemical substances promoted by organic regulations and the treatment of clinical mastitis as its main use. Although the bulk SCC was significantly higher in farms that use homeopathic treatments, in part possibly due to a lower use of preventive dry off therapies, the threshold was not exceeded, so farmers did not have economical penalty and milk quality was not affected complying with the required standards. On the contrary, homeopathic therapies seem to be an alternative to reduce antibiotic treatments and to avoid antibiotic waste milk. In this sense, more studies are necessary to improve the efficacy of homeopathy, even combined with other alternative therapies, such as acupuncture or phytotherapy, to obtain a higher effect, allowing farmers reduce the use of chemical substances and meet the organic farming principles.

Conflict of interest statement

The authors declare no known conflict of interest.

Acknowledgment

This work was supported by the Spanish Government (project code AGL2010-21026) and Centro Tecnológico Agroalimentario de Lugo (CETAL). Inmaculada Orjales holds a predoctoral contract (Ref. PRE/2013/156) from the Xunta de Galicia. The authors thank all the farmers who participated in the study and the staff of regional dairy laboratories for analysing the milk samples and for providing the SCC analysis records.

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