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Prophylactic Acts and Ethnoveterinary Medicine for Sick Cattle in Few Cow Farming in the Wilaya of Skikda (Northeastern Algeria)

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Abstract

A sample of 130 dairy cattle farms distributed in twenty communes of the wilaya of Skikda located in the North East of Algeria was the subject of investigations on the prophylactic acts during 3 agricultural campaigns and on the therapeutic methods adopted by the breeders when diseases appear in their herds as well as knowledge of traditional remedies based on medicinal plants used in dairy cattle farming to treat certain diseases. Concerning prophylactic acts, the regular monitoring of internal and external parasitism of animals practiced respectively in 58.6% and 82.2% of farms surveyed is significant compared to other regions of the country. On the other hand, vaccination against rabies is only practiced in 25.5% of farms. While the screening operations for tuberculosis and brucellosis were only carried out in 38.2% of cases. The breeders surveyed in the wilaya of Skikda adopt different strategies to try to treat their sick animals: 65.4% of 'among them call on the veterinarian while 18.5% try to treat their sick animals themselves with the use of medicinal plants against certain diseases and other breeders use drugs and medicinal plants at the same time to accelerate healing for fear of veterinary costs. In terms of ethnobotany, the 20 plant species used in the composition of 24 traditional remedies to treat various livestock diseases have shown that the aerial part of the plant is the most used part (65%) and the form of use the most. the most widespread is the infusion (50%). It seems important to encourage scientific research in order to identify the traditional remedies used in ethnoveterinary medicine and to test their effectiveness.

Introduction

In Algeria, dairy cattle farming is considered to be a main source of animal protein for a booming human population. However, it is struggling to develop and several constraints are to blame. In addition to irregular rainfall, insufficient supply of fodder resources and limited agricultural land, pathologies are responsible for considerable economic losses. Animal health is one of the daily concerns of breeders. It directly impacts animal welfare as well as the technical and economic performance of farms. The breeder who cares about the health, well-being and productivity of his cattle should protect his herd from disease by prophylactic actions. Indeed, in dairy cattle farms, prophylactic actions are justified first and foremost on an economic level by the very high veterinary costs incurred by the breeder and by the drop in milk production and the death of animals. Faced with the different pathologies affecting animals, breeders adopt different strategies according to their means in order to treat their sick animals. In many regions of the earth, people use traditional knowledge to treat their sick animals, indeed, according to Mazouz and Mokrane [1] traditional medicine or ethnoveterinary medicine could prevent the appearance of certain diseases and fight against a large number of viral, bacterial and parasitic pathologies. It is an ancestral practice that has long contributed to the improvement of traditional farming systems, and it consists of using traditional knowledge and practices to treat animal pathologies and improve their productivity [2], however, this knowledge tends to disappear due to the emergence and adoption of modern medicine considered more effective. Moreover, studies have even made it possible to understand the mechanism of action of certain compounds isolated from plants used in traditional veterinary medicine [3]. Khalil et al. [4] subsequently demonstrated that these compounds act in particular by strengthening the immune system of animals through the stimulation of macrophages or by destroying the pathogen.

Given the ease of preparing the traditional herbal treatment, its free nature, and its effectiveness, ethnoveterinary medicine occupies a significant place in the practices of Algerian breeders and has been adopted in the frameworks of livestock policies in developing countries [5] because due to its effectiveness in the treatment of sick animals, it contributes to reducing the use

of chemical molecules including antibiotics generating harmful effects for animals and for the environment and humans [2]. But in addition, to allow good health management of farms, it would be important to reconcile the two modern and traditional medicines while paying particular attention to the use of synthetic drugs and vaccines which are important for the health of farm animals production [6].

Materials and Methods

A sample of 130 dairy cattle farms distributed in twenty communes of the wilaya of Skikda located in the North East of Algeria at 490 km from the capital Algiers was the subject of investigations on the prophylactic acts carried out by the veterinary services during 3 agricultural campaigns (2016/2017, 2017/2018 and 2019/2020). And we are also interested in knowing the therapeutic methods adopted by breeders when pathology appears in their herds as well as knowledge of traditional remedies based on medicinal plants used in dairy cattle breeding to treat certain diseases (Figure 1).

Figure 1: Distribution of farms surveyed by municipality in the wilaya of Skikda.

For this, we have recorded all the prophylactic acts carried out by the veterinary services, including screening operations for the three zoonoses (brucellosis, tuberculosis) and vaccination against foot-and-mouth disease and rabies, as well as the prophylactic acts carried out by the breeder himself in the form of internal and external deworming, and we collected data concerning the mode of treatment of sick animals during the appearance of pathologies by recourse to modern or traditional medicine or both at the same time. We were also able to carry out an ethnobotanical survey on the use of different medicinal plants for veterinary use by breeders.

Results and Discussion

Regarding prophylactic actions, breeders carry out regular external and internal deworming of animals respectively in 58.6% and 82.2% of farms, and vaccination of animals against foot-and-mouth disease is practiced by veterinary services in 80.3% , on the other hand that against rabies is carried out in only 25.5% and finally the operations of detection of tuberculosis, brucellosis they were only carried out in 38.2% of the farms (Figure 2).

Faced with the different pathologies affecting their animals, the breeders surveyed adopt different strategies according to their means to treat their sick animals. Occasionally, 65.4% of breeders seek a veterinarian following the appearance of pathologies, on the other hand, 18.5% some of them do not do it at all for fear of veterinary costs and they prefer to treat their sick animals themselves by using medicinal plants against diarrhoea, mastitis, respiratory diseases, bloat, anemia, wounds, etc. (Table 1). Other breeders combine drugs and herbal remedies to try to speed healing. Regular monitoring of internal and external parasitism of animals is practiced respectively in 58.6% and 82.2% of the farms surveyed, which is significant compared to other regions of the country, for example Abdeldjalil [7]reports that only 12.5 % of breeders carry out internal and external deworming of animals in 40 farms in the wilaya of Constantine. Regarding vaccination against foot-and-mouth disease, it is practiced in Skikda in 80.3% of the farms surveyed, this rate has already been reported by Bouzebda [8] which indicates the good

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classification of the wilaya of Skikda concerning the vaccination of cattle against this disease. Nevertheless, screening operations for other diseases (tuberculosis, brucellosis and leucosis) were only carried out in 38.2% of the farms surveyed.

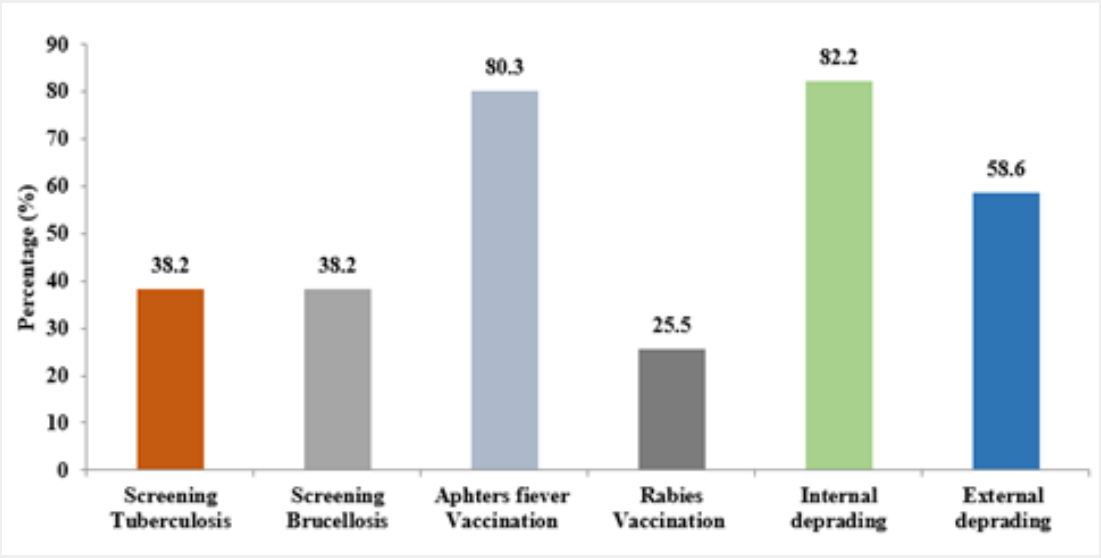

Figure 2: Percentage of farms surveyed practicing prophylactic acts.

Table 1: Traditional treatment based on medicinal plants and other practice used in certain pathologies by dairy cattle farmers.

Pathology	Traditional treatment adopted by the breeder			
	Commun name	**Scientific name**	**Parts of the plant used**	**Method of use**
Clinical mastitis	Olive tree	*Olea europaea L*	Oil	Local application
	Lentisk	*Pistacia lentiscus L*	Oil	Teat injection
Diarrhea	Common thyme	*Thymus vulgaris L*	Aerial part	Infusion
	White mugwort	*Artemisia herba alba L*	Aerial part	Infusion
	Néflier	*Eriobotrya japonica L*	Leaves	Infusion
Blaot	Menthe	*Mentha viridis L*	Aerial part	Infusion
	Common thyme	*Thymus vulgaris L*	Aerial part	Infusion
	Bicarbonate	-	Powder	Mixed in water
	Fenugreek	*Trigonella foenum-graecum*	Graines	Infusion
	Cumin	*Cuminum cyminum*	Graines	Infusion
	Castor	*Ricinus communis*	Oil	
Calf omphalitis	Olive tree	*Olea europaea*	Huile	In poultice
Insolation and hyperthermia	Henna	*Lawsonia inermis*	Powder or Leaves	In poultice
	Bleeding	-	-	-
Scabies	Rosemary	*Rosmarinus officinalis L.*	Leaves and stems	Local application
	Old and burnt oil	-		
	Olive tree	*Olea europaea*	Leaves	Local application (mixed with garlic and olive oil)
Injuries	Long-clustered cyst	*Cystise triflorus*	Leaves and stems	In poultice
	Grenade	*Punica grantum L*	Powdered bark	In poultice
Boils and abscesses	Onion	*Allium cepa L.*	Pulp	heat with olive oil and applied topically
	White horehound	*Marrubium vulgare L*	Leaves and stems	In poultice
Anemia	Wild cucumber	*Ecballium elaterium*	Leaves and stems	Iinfusion

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Respiratory diseases	Harmel	*Peganum harmala*	Powder	Mixed with fodder
	White horehound	*Marrubium vulgare L*	Leaves and stems	Infusion
	Garlic	*Allium sativum L.*	Bulbs	Macération
Constipation	Cassia, Senna	*Cassia acutifolia L.*	Leaves	Infusion or macération
Conjunctivitis	Olive tree	*Olea europaea*	Oil	Instillation

The results of the ethnobotanical survey carried out in the farms surveyed in the wilaya of Skikda had made it possible to list 20 plant species which are included in the composition of 24 traditional remedies to treat various cattle diseases, the most frequent of which are clinical mastitis, diarrhea , respiratory and digestive diseases, hyperthermia, scabies, wounds, conjunctivitis, sunstroke and omphalitis in calves . It is the aerial part of the plant that is the most used part (65%) and the most widespread form of use is the infusion (50%) (Table 1).

The recourse by the breeders surveyed to the mixed use of drugs and medicinal plants may be necessary but not sufficient. Delesalle [6] suggests reconciling the two medical practices while paying particular attention to the use of synthetic drugs and vaccines which have an important part to play in the health of farm animals. In terms of ethnobotany, the 20 plant species that are part of the composition of 24 traditional remedies to treat various cattle diseases have shown that the aerial part of the plant is the most used part (65%) and the form of use the most widespread is the infusion (50%).

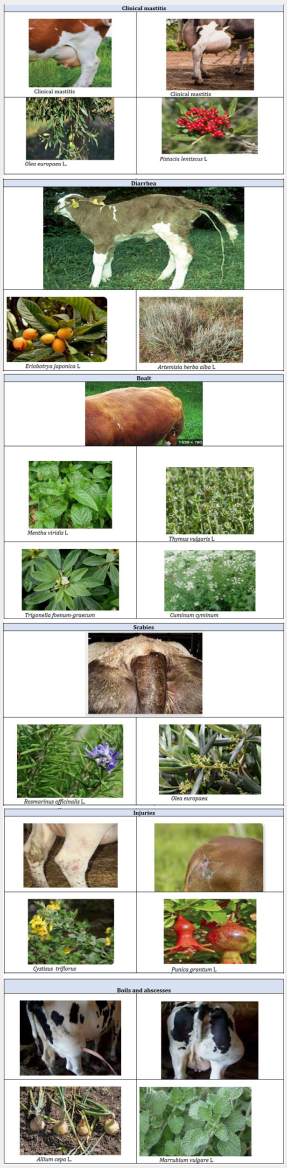

Figure 3: Plants and remedies used to treat different pathologies in dairy cattle farms.

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A similar survey was reported by Kone et al. [9] at Sinématiali among 40 breeders, where 24 plant species divided into 24 genera and 18 botanical families were listed and treating various bovine ailments, the most common of which are diarrhea, malaise bellyache, intestinal worms and malaria. The leaves are the most used organs (52%). The form of use of these plants is decoction (72%) [10-11] (Figure 3).

Conclusion

The breeders surveyed in the wilaya of Skikda adopt different strategies to try to cure their sick animals: 65.4% of them call on the veterinarian while 18.5% try to treat their sick animals themselves with use of medicinal plants against certain diseases and other breeders resort to drugs and medicinal plants to speed healing for fear of veterinary costs. This proves the interest of breeders in the region in traditional therapies to treat their sick animals. Modern veterinary medicine seems unable to deal alone with the health problems affecting farm animals in rural areas since access to these areas is difficult, in addition to the relatively high veterinary costs, pushing breeders to move towards traditional medicine to treat their sick animals. Because of its contribution to the improvement of ethnoveterinary medicine, it seems important to encourage scientific research, it would be necessary to identify the traditional remedies used in ethnoveterinary medicine, to test their effectiveness. However, strengthening the complementarity between modern medicine and ethnoveterinary practices in the treatment of pathologies in dairy cattle farms seems to be a promising alternative.

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