

## CONTROL AND PREVENTION OF SUCKLING LAMB MORTALITY IN NELLORE BREED.

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### ABSTRACT

A longitudinal and cross sectional studies on suckling lamb mortality, reared under two different systems namely indoor and outdoor systems, in 51 Mandals of kadapa during 2006 to 2018, in the Nellore breed of sheep ,were conducted. The clinical efficacy of 1.5 ml amoxicillin dry syrup and potassium clavulanate , given for 3 days to ailing and suspected lambs, and nutritional efficacy of 5 to 10 ml liquid calcium and vitamins supplemented for 15 days, were studied to overcome the devastating lamb mortality . The study proved to be highly effective by reducing the mortality significantly and improving the health and general condition appreciably in suckling lambs. Weaning period was reduced by 15 days and weaning weight increased from 10 to 14 kgs. The weaning Weight of lambs at 90 days, under the outdoor subsystem of rearing of the free range system was 8 kgs only.

**Key words**-longitudinal and cross sectional study, suckling lamb mortality, Nellore breed, Amoxicillin dry syrup and Potassium clavulanate.-liquid calcium.

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## INTRODUCTION

Sheep provides important protein sources in the diets of the poor farmers and help to provide extra income and support for the survival of many farmers in the tropics and sub-tropics of India. Neonatal mortality in small ruminant livestock has remained stubbornly unchanging over the past 40 years, and represents a significant loss of farm income, contributes to wastage and affects animal welfare.(1).

Direct effect of lamb loss includes a reduction in the number of lambs sold and number of lambs available for flock replacement. Indirect costs involve wastage on reproductive expenditure such as ram purchase and usage

The overall lamb mortality from birth to 1 month age, birth to weaning age and birth to 1 year age was 2.21%, 4.70% and 10.10%, respectively (4).The maximum lamb mortality rate was 17.2%, observed in the year 2001 followed by 16.6 % and 5.8% in 2002 and 2004, respectively. Mustafa et al ( 5 )

Raghavendra et.al (6) while conducting an epidemiological survey on lamb mortality in the Rayalaseema Region of Andhra Pradesh observed that the mortality was majorly due to infectious origin, 1533 (85.26%) followed by non-infectious origin 223 (12.4%) and miscellaneous causes 42 (2.34%).

Reducing lamb losses have to take various factors into account, including the sheep farming system, nutrition, health planning and management.

In Andhra Pradesh 70 per cent of farmers, adopt a free range system of sheep rearing, due to poverty, small or no holdings and the conducive geographical environment. Under the free range system, two subsystems of sheep rearing are being practiced. One is out-door or lamb at foot or migratory system. In this subsystem, neonatal lambs follow the mother and will have free accesses to the mother and his flocks move one place to another place, so they are healthy and free from soil borne disease, as they are penned in open dry place but the lambs are unmanageable and providing feed supplements to individual lambs is not possible.

In second subsystem is indoor or coop or stationary system In Andhra Pradesh 70 per cent of farmers, adopt a free range system of sheep rearing, due to poverty, small or no holdings. Due to the conducive geographical environment, the free range system is being adopted., There are two subsystems of sheep rearing and both are being practiced. One is out-door or lamb at foot or migratory system. In this subsystem, neonatal lambs follow the mother and will have free accesses to the mother and his flocks move one place to another place, so they are healthy and free from soil borne. In this subsystem the newborn lambs are kept under the coop, the lambs have limited access to the mother's milk, since the mother leaves her offspring and go for grazing at 9 AM and can suckle in the evening at 6 P M, as soon as, she returns from the grazing. Missing of mother's milk nearly for 9 hours upset the temperament of the neonatal lambs and

may lead to hunger, mineral and vitamin deficiency and finally soil licking vice.

As a result of this licking tendency, they acquire soil borne diseases. The penned areas are damp due to spillage of urine and droppings of the captive lambs, kept under the coop. Sometimes the situation will be accentuated by incessant rains leading to high mortality.

Dohoo et al (7) analyzed the data of state diagnostic laboratories, Canada, from 1978 to 1982 and identified the major causes for lamb mortality amongst the lambs were starvation, pneumonia, scours and accidents. Pasteurella species were the etiological agents most commonly associated with pneumonia in lambs and Escherichia coli and salmonella species had the same predominant position with regards to non-parasitic scours.

A longitudinal and cross sectional survey on suckling lamb mortality in both systems of free range sheep rearing, from 2006 to 2018 was conducted, in 8 mandals under outdoor system and 43 mandals under indoor system. During the survey, prior to 2009, the suckling lamb mortality was 12 to 15 percent (table 1). Vain attempts were made with then available drugs, permissible for tender lambs like oral formulations of Oxytetracycline, Amoxicillin, Lixin.

They proved to be toxic, ineffective, narrow spectrum, non-palatable, not available freely in the market and costly.

After thorough deliberations, a new effective palatable, non-toxic, broad spectrum formulation, in the form of dry syrup consisting Amoxicillin and potassium clavulanate, was selected for trials, in affected and suspected suckling lambs with date of birth from day 1 to day 21.

## MATERIALS AND METHODS

Shonclav is a brand product Schon pharmaceuticals, Indore comprising Amoxicillin, a  $\beta$ -lactam antibiotic 200 mg and a  $\beta$ -lactamase inhibitor, Potassium clavulanate 28.5, in 5 ml with two presentations of 100 ml and 30 ml dry syrup, was selected and regularly procured since, 2009 to date. The Boiled and cooled water is poured up to the etched mark and shaken thoroughly before use. Reconstituted solution can be stored for 4 days at room temperature and for 10 days under refrigeration. The dry syrup is more effective for pre-ruminant than ruminating lamb. The biological-half life is 1 to 3 hours (8). Weaning weight and weaning period of lambs under two subsystems were estimated.

Case reports of suckling lamb mortality, reported from villages of 51 mandals of Kadapa Districts of Andhra Pradesh from 2006 to 2018, were analyzed and tabulated. Intas pharmaceuticals, Ahmadabad. Ten ml of Calskithi was mixed with one milliliter of Intavita, thoroughly and supplement @ 5 ml per day, from day 4<sup>th</sup> for 14 days and @ 10 ml on 15<sup>th</sup> day till weaning.

**Table 1(Indoor system)**

S.No	Year	Population	Mortality	% of survival	Remarks
1	2006-2007	45000	6750	85	Tried with Oxytetracycline, Ammoxcillin and Lixin,with limited success
2	2007-2008	48000	7680	84	
3	2008-2009	46000	7360	88	
4	2009-2010	40,000	2400	94	1)Dry syrup (shonclav) Amoxicillin 200 mg and Potassium clavulanate 28.5 mg per 5 ml , Given @ 1.5 per day per lamb, for 3 days continuously. Since 2009, With a dramatic success. 2) From 2009 onwards, the mortality was gradually declined from 15 % to 0.8%.
5	2010-2011	42000	840	98	
6	2011-2012	202700	3041	98.5	
7	2012-2013	250700	2507	99	
8	2013-2014	311600	3116	99	
9	2014-2015	335640	1558	99.5	
10	2015-2016	624320	2497	96.5	
11	2016-2017	409490	4094	99	
12	2017-2018	381253	3050	99.2	

**Figure1**

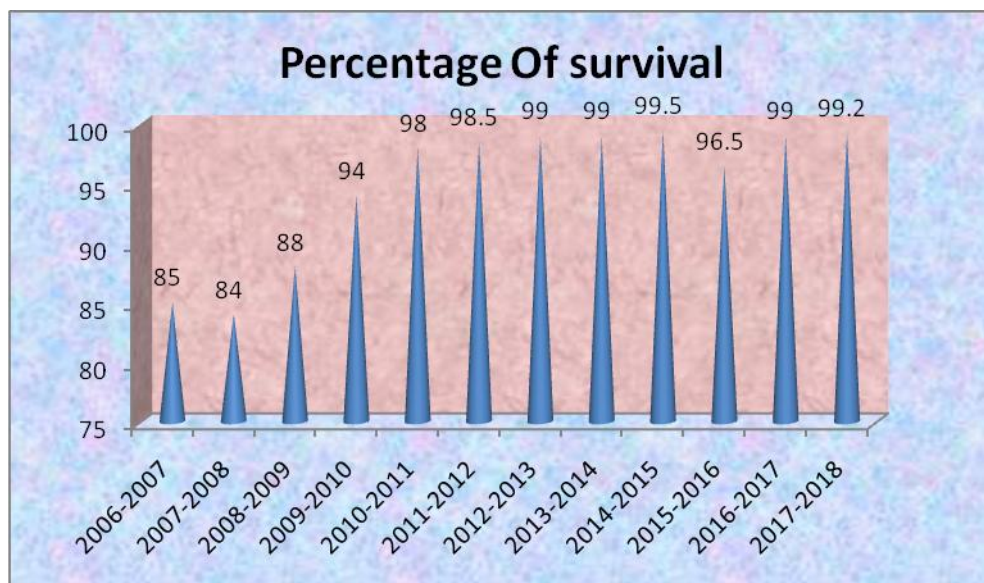


Figure 2

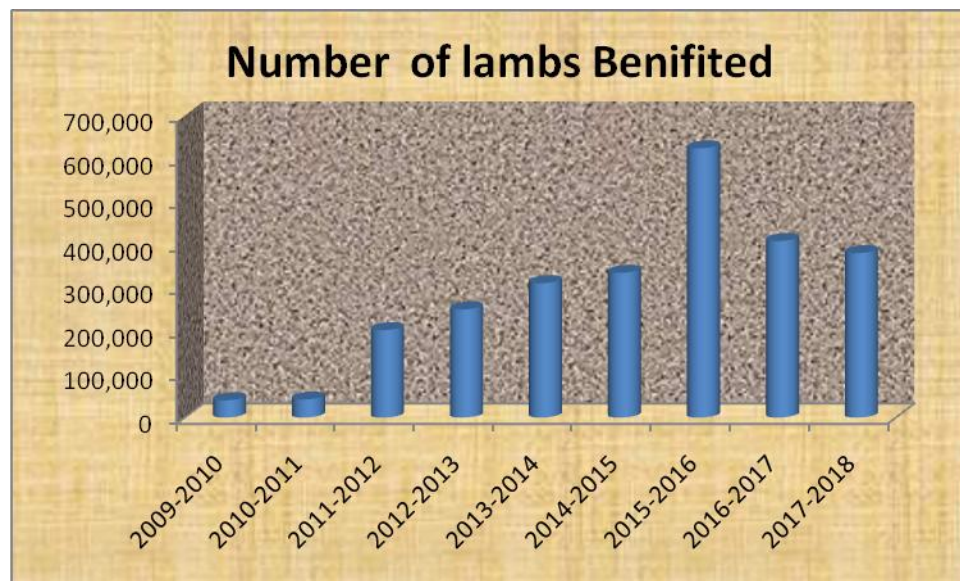


Table 2 (outdoor system)

S.No	Year	Number of lambs	Mortality	Percentage of mortality	Percentage of survival	Remarks
01	2006-2007	43000	215	0.5	99.5	No Treatment rendered
02	2007-2008	34000	136	0.4	99.6	
03	2008-2009	46040	184	0.4	99.6	
04	2009-2010	60800	182	0.3	99.7	
05	2010-2011	54600	436	0.8	99.2	
06	2011-2012	34060	204	0.5	99.5	
07	2012-2013	47440	284	0.6	99.4	
08	2013-2014	70100	140	0.2	99.8	
09	2014-2015	39420	315	0.8	99.2	
10	2015-2016	46454	93	0.2	99.8	
11	2016-2017	38721	193	0.5	99.2	



Table: 3 Performance of two subsystems.

S.No	Parameters	Indoor system	Outdoor system
01	Years	2006-2017	2006-2017
02	Population	27,36,703	5,56,994
03	Management	Manageable	Unmanageable
04	Mortality	> 12 to 15% if untreated < 1% if treated	>1 %
05	Type	Nellore Brown	Nellore Palla
06	Weaning period	90 days untreated 75 days treated	90 days
07	Weaning weight	10 kgs untreated 14 kgs treated	8 kgs
08	Number of Mandals	8	43

## RESULTS AND OBSERVATION

It is evident from the table-1, that the mortality in suckling lambs, reared under the indoor coop system, practiced in 43 mandals, prior to 2009 was 12 to 15%. There was a gradual decline in the mortality rate after the administration of the Shonclav and vitamin mixed calcium, from 2009 onwards from 15 to 0.8%. The treated lambs were active and healthy, put on laudable weight of 14 kgs with shiny coat and glistening eyes. Jayashree (9) observed that the weaning weight in Nellore Jodipi lambs as 13.14 kgs, with mother's milk, only when weaned at 90 days of birth.

In the present study, the weaning period was reduced by 15 days. The average

weaning weight increased from 10 kgs to 14 kgs. Surprisingly there was no mortality in suckling lambs, reared under the outdoor rearing system, practiced in 8 mandals, in the corresponding periods of study. The symptoms observed were, fetid, whitish diarrhea, tenesmus, prostration, pyrexia, in As noted in the table no 1, the rate of adoption increased 100 times within a span of 7 years. .

## Discussion

In the indoor system, due to non availability of sufficient milk to lambs, they is every possibility to lick the soil and may acquire soil borne infections., but the system has good potential to improve the health status and general condition of lambs, as the lambs are easily

manageable to feed medicinal and nutritional supplements for rapid growth and weight gain. ..

Vanisankar et al (10) culturally isolated *Escherichia coli*, *Salmonella* species, *klebsiella*, and *Pseudomonas* species, from 47 samples, collected from slaughter houses and from dead sheep in Rayalaseema Region. The dramatic reduction in lamb mortality and rapid weight gain in suckling ones reared under indoor system in 43 mandals, was equivocally due to the adoption and efficacy of two extension measures, one by oral administration of broad spectrum Amoxicillin and Potassium clavulanate (8) and the other by oral supplementation of liquid of calcium and vitamins.

The high mortality of 15 % mortality recorded in the present study, was in agreement with those of Raghavendra et al 6,5,10,11 . Vanisankar (10) isolated 47 samples from various slaughter houses in Rayalaseem, *E.coli*, *salmonella* sps, *klebsiella* species, and *Pseudomonas* species.

It is evident from the table 3, that weaning period was reduced from 90 days to 75 days and weaning weight was increased to 10 kgs in un-treated lambs to 14 kgs in treated ones, in the indoor system of extension where as in outdoor system, the weaning weight recorded as 12 kgs and weaning period as 90 days. ((Table 3) This clearly shows the superiority of treated ones in the indoor sub-system of free range systems. The reasons for low mortality (<1 %) in indoor system were due to availability of milk to the lambs, throughout the day,

frequent change of pens and healthy penning areas. The observed mortality was of non infectious origin.

Survival rate (Figure 1) and number of lambs benefited (Figure 2) clearly demonstrates that the unique efficacy of the dry syrup over conventional medications practiced prior to 2008. After witnessing and gathering information, about the benefits of the two extension methods, from fellow shepherds and they quickly embraced, this established extension strategy and also communicated to others shepherds of neighbouring districts in Rayalaseem, Telangana, North coastal Andhra and Karnataka and all of them have been enjoying the fruits of this extension. This is evident from the figure 2, that a gradual and steady increase in the rate of lambs benefited and impressed the number of farmers, doctors, pharmaceutical companies, distributors and chemists to adopt the new medication and nutritional supplementation. .

## Conclusion

The suckling lamb mortality in Nellore Breed, in outdoor and indoor systems of sheep rearing, from 2006 to 2018, in 51 mandals of Kadapa district, was studied. The efficacy of administration of 1.5 ml of Shonclav (Amoxicillin dry syrup) for 3 days to ailing and suspected lambs and supplementation of 10 ml liquid calcium and vitamins to soil licking lambs were assessed. The mortality was brought from 15 to 0.8% and their general condition was elevated in high proportions. The weaning weight was increased from 10 to 14 kgs.

The weaning period was from brought 90 days to 75 days. The weaning weight of Palla lambs, reared under outdoor subsystem, was 8 kgs only. The rate of adoption increased to 100 times since 2009 within a span of 7 years.

**Conflict of interest**-There is no conflict of interest

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### References

**Dwyner C M, Conington J, Corbiere F, Holmøy I H, Muri K, Nowak R, Rookes J, Vipond J and Gautier M**(2015) Invited review: Improving neonatal survival in small ruminants:science into practice Animal, page 1 -11.

**Barlow, R. M., A. C. Gardiner, K. W. Angus, J. S. Gilmour, D. J. Mellor, J. C. Cuthbertson, G. .** J. of Sh. & G. Sc., Vol.5 (1), P: 349-356.2010

**Dennis, S. M** Perinatal lamb mortality in Western Australia. 1. General procedures and results. 2. Noninfectious conditions. Aust.Vet. J., 50: 443-449,1974

**Bange ,y** The Survival Analysis of the Potential Risk Factors Affecting Lamb Mortality in Deccani Sheep, Journal of Dairy, Veterinary & Animal Research 4(2):1-6.2016

**Mustafa M I , Mehmood M M LateefI, Bashir k and Khalid AR )** Factors Influencing Lamb Mortality from Birth to Weaning in Pakistan, Pak. j. life soc. Sci. 12(3): 139-143.2014

**Raghavendra,S V . Anand Kumar, A. Amaravathi P , . Sanem Somasekhar, SLDL. Jagadeesh Babu A and Madhav Rao T )** Epidemiological survey on lamb mortality in Rayalaseema region of Andhra Pradesh in India The Pharma Innovation Journal ; 6(9): 470-474.2017

**Dohoo IR, Curtis A R ,Finley G G )**A Survey of Sheep Diseases in Canada Canadian J Comp Med, 5; 49: 239-247.1945

Thompson USP Veterinary Pharmaceutical Information Monographs – Antibiotics,J pharmacol therapeutics volume 26,47-49.2003

**Jayashree M** effect of weaning age and feeding system on growth performance and serum biochemical profile of nellore (jodipi) male lambs. Thesis submitted to the sri venkateswara veterinary university in partial fulfillment of the requirements for the award of the degree of master of veterinary science In the faculty of veterinary science,Tirupathi.2014

**Vani sankar P,Raghavendra S V,Sudheer P Babu N S, Sujatha K Anand Kumar A**(2018) cultural isolation and Biochemical characterization of Etiological Factors in Gastrointestinal of Disorders of Sheep in Rayalaseema Region of Andhra Pradesh(2018),Andhra Pradesh science congress,page 201.



**Suárez V.H. & Buseti M.R.** 2009. Health management practices and disease prevalence in dairy sheep systems in

Argentina. *Pesquisa Veterinária Brasileira* 29(11):931-937.

