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## Clinical management of tongue rolling orosthenic syndrome in cattle: A review

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### Abstract

Tongue rolling is a recurring behaviour which involves opening the mouth and flicking the tongue in and out to perform rapid movements. The objectives of this study were to determine the clinical, haemato-biochemical changes and management of tongue rolling stereotypic behaviour in calves and cattle. Four calves, four heifers and two adult cattle with the history of tongue rolling in intensive farming system were selected for the study. Clinical examination revealed protrusion of tongue in and out and rolling with normal feeding habits and vital signs. Haemato-biochemical parameters were within the normal range. Animals were clinically managed by changing the environment, provided with forages and allowed for grazing.

**Keywords:** cattle, tongue rolling, grazing, forage

### Introduction

Tongue rolling mainly occurs in veal cattle and is most likely a stereotypic behaviour resulting from confinement. The affected cattle flick its tongue outside and roll it back inside the mouth, followed by swallowing saliva (Landsberg and Denenberg, 2016) [5]. With tongue rolling or tongue playing, the animal curls and uncurls the tongue inside or outside their mouth. After that, partial swallowing of the tongue and gulping of air may take place. Very few literatures are available regarding tongue rolling orosthenic syndrome in cattle. The present study was undertaken to study the clinical, haemato-biochemical changes and management of tongue rolling stereotypic behaviour in calves and cattle.

### Materials and Methods

Four Holstein Friesian cross bred calves, four heifers (two Holstein Friesian cross bred and two Jersey cross bred) and two Jersey crossbred adult cattle were presented to Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with the history of protrusion of tongue in and out continuously and rolling frequently. All the animals were subjected to detailed clinical examination as per standard methods (Rosenberger, 1979) [8]. Haemato-biochemistry included haemoglobin, packed cell volume, red blood cells, white blood cells, differential leukocyte counts, total protein, albumin, globulin, calcium, phosphorus, potassium and magnesium were estimated as per standard methods (Jain, 1986) [4]. Data obtained during the study were analyzed and interpreted by student's unpaired 't' test as described by Snedecor and Cochran (1994) [9] with SPSS statistical software (version 16). Animals were clinically managed as described by Binev (2020) [2].

### Results and Discussion

Stereotypic behaviour is a term applied to repeated sequences of a behaviour that has no apparent purpose or benefit (Mason and Rushen, 2006) [6]. In the present study, the tongue rolling behaviour was observed in different age group of animals. Out of 10 cattle, 4 were calves (around 3 to 5 months of age group), 4 were heifers (2 years old) and 2 were adult cattle. Age of occurrence in the present study was in concurrence with the statements of Ridge *et al.* (2020) [7] where they recorded tongue rolling in cattle aged between 6 months to 6 years. All the animals were reared in the intensive farming system and reported from various premises. Higher incidences were associated with too little space per animal, rations with no dry forage and difficult access to water. In the present study, feeding habit, urination and defecation were normal in all the animals.

On clinical examination, vital signs like temperature, heart rate and respiratory rate were within the normal range with pink and moist mucous membranes (Binev, 2020) [2]. It was noticed that the tongue was protruded and rolling in and out

all the times continuously for a period of 2 to 6 months in calves and 1 year in cattle and sometimes it extends outward to long distance frequently (Fig. 1).



**Fig 1:** Protrusion of tongue outside and rolling behaviour in an adult cattle

Reduction in the rumination time due to tongue rolling behaviour in cattle were in concurrence with Ishiwata *et al.*

(2008) [3].

The results of the haemato-biochemistry are given in Table 1.

**Table 1:** Haemato-biochemistry in apparently healthy cattle and cattle with tongue rolling orosthenic syndrome

S. No.	Parameters	Apparently Healthy cattle (n=10)	Cattle with tongue rolling orosthenic syndrome (n=10)
		Mean±SE	Mean±SE
1.	Haemoglobin (g/dl)	12.31±0.12	11.98±0.18
2.	Packed cell volume (%)	36.26±0.10	35.87±0.13
3.	Red blood cell (x10 <sup>6</sup> /cmm)	6.01±0.17	5.82±0.12
4.	White blood cell (x10 <sup>3</sup> /cmm)	7.02±0.10	6.98±0.14
5.	Neutrophils (10 <sup>3</sup> /cumm)	2.32±0.03	2.12±0.03
6.	Lymphocytes (10 <sup>3</sup> /cumm)	4.28±0.04	4.21±0.02
7.	Monocytes (10 <sup>3</sup> /cumm)	0.11±0.01	0.14±0.01
8.	Eosinophils (10 <sup>3</sup> /cumm)	0.03±0.05	0.04±0.05
9.	Aspartate amino transferase (AST) (units/L)	101.45 ± 0.35	100.32 ± 0.23
10.	Total protein (g/dl)	6.02±0.13	6.26±0.14
11.	Albumin (g/dl)	2.82±0.01	2.98±0.02
12.	Globulin (g/dl)	3.19±0.14	3.28±0.17
13.	Calcium (mg/dl)	10.47±0.15	10.36±0.33
14.	Phosphorus (mg/dl)	5.68±0.10	5.25±0.03
15.	Potassium (mEq/L)	4.15±0.05	4.10±0.03
16.	Magnesium (mg/dl)	2.10±0.05	2.09±0.01

Normal haemato-biochemical values in the present study were in correlation with Binev (2020) [2]. The faecal sample examination was negative for parasitic ova.

Clinical management included change in the environment of animals, confined animals were advised to take out for grazing and animals kept alone were accompanied with other animals and let for grazing. In calves, the feeding pattern was advised to supplement roughages. Similarly, Albright and Arave (1997) [1] and Binev (2020) [2] clinically managed tongue rolling in cattle by transferring to loose housing or grazing from tethering and by providing straw or hay.

### Conclusions

It was concluded that animals with restricted movement by rearing in intensive farming system and fed with less forages and rest more resulted in frustration and change in the behaviour. All these could have caused tongue rolling orosthenic syndrome in cattle without apparent purpose and benefit. Changing the environment, providing forages and allowing for grazing gradually improved the clinical condition of the animals.

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### References

1. Albright JL, Arave CW. The behaviour of cattle. CAB International, Walingford, 1997, 306.
2. Binev R. Tongue rolling stereotypy in cattle-etiological, epidemiological and clinical investigations. Bulgarian Journal of Veterinary Medicine, 2020, 1-9.
3. Ishiwata T, Uetake K, Eguchi Y, Tanaka T. Function of tongue-playing of cattle in association with other behavioural and physiological characteristics. Journal of Applied Animal Welfare Science. 2008;11(4):358-67.
4. Jain NS. Haematological techniques. In: Schalm's Veterinary Haematology. Edn 4, Lea and Febiger, Philadelphia, 1986, 20-86.
5. Landsberg GM, Denenberg S. Behavioral problems of cattle. eBook Merck Veterinary Medicine Manual. Edn

- 10, Merck and Co., Whitehouse Station, NJ, 2016.
6. Mason G, Rushen J. Stereotypic behaviour in captive animals: fundamentals and implications for welfare and beyond, Edn 2, CABI publishing, 2006, 325-356.
7. Ridge EE, Foster MJ, Daigle CL. Effect of diet on non-nutritive oral behavior performance in cattle: a systematic review. *Livestock Science*, 2020, 238.
8. Rosenberger G. Clinical examination of cattle. Edn 2, Verlag Paul Parey, Berlin and Hamburg, Germany, 1979, 184-212.
9. Snedecor GW, Cochran WG. Statistical methods. Edn 8, Iowa State University Press, Ames, Iowa, 1994.