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CHANGES IN ANDROLOGICAL AND LIVER ENZYME VALUES IN NELLORE BULLS WITH CLINICAL SIGNS OF NATURAL *Urochloa poisoning spp*

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Abstract: Alterations in andrological values and liver enzymes in Nellore bulls with clinical signs of natural poisoning by *Urochloa spp.* Intoxication of cattle by species of *Urochloa spp* are frequently reported in the literature. However, intoxications in adult animals are rare. Thus, the present work deals with the case of poisoning by two species of *Urochloa* (brachiaria), in 2 Nellore bulls, 30 months old, weighing approximately 407.8±38.2 kg, managed in an extensive grazing system, in the municipality of Porto Real - RJ. In the clinical examinations, the presence of signs of intoxication was verified: tachypnea, pale mucous membranes, amber urine and in jets, semi-pasty stools, pink ejaculates, lesions on the skin and preputial mucosa, and weight loss. In the andrological exams it was observed in the seminal characteristics, reduction of sperm concentration (187 and 224.4x10 ^{7} / mL), motility (15 and 10%), vigor (1 and 2) and increase of major defects (5.5 and 4.5%), total defects (29.5 and 28.8%) and AST (71.2 and 82.7 U/L) and ALT (43.7 and 53.1 U/L) enzymatic profile values. After removing the animals from the paddocks with the presence of the *Urochloa,* the affected animals showed good recovery. Clinical and andrological examinations associated with laboratory tests were essential for the diagnosis of poisoning in bovine breeders kept in pastures with these grasses. In regions with soils with a lot of organic matter and moisture, intercropping *Urochloa with other tropical forages in the daily diet* is suggested to prevent cattle poisoning.
Keywords: Andrology. Toxic plants. Serum biochemistry.

INTRODUCTION

Brazil has dozens of grasses of the genus *Urochloa* (brachiaria), more than 100 species, originating in Equatorial Africa, and found in practically the entire national territory (Assis et al. 2003), causing significant economic losses and worrying productivity (Tokarnia et al. 2012), due to the different degrees of intoxication they cause in different animal categories. Beef cattle raising is an activity that has grown a lot in recent years in the southern region of the State of Rio de Janeiro, mainly due to the decline of dairy farming. The increase in the beef herd, based on the Nelore breed, led to an increase in the areas of cultivated pastures, highlighting the brachiaria (*Urochloa brizantha, U. decumbens* It is *U. radicans*), and the latter, in most cases, spreads quickly without human intervention, given the favorable conditions of the region (topography and large areas of waterlogging).

Among the varieties of *brachiaria* that most affect cattle in cases of poisoning in Brazil, there is *U. decumbens* It is *U. Radicans.* Tokarnia et al. (2012) reported that in Brazil, hepatogenous photosensitization (FTS) has been diagnosed mainly in cattle and sheep and, sometimes, also in horses, goats and buffaloes that graze grasses of the genus Urochloa, *which* contain significant amounts of saponins – substances causing this intoxication. According to the authors, *U. decumbens* was introduced in the country through seedlings, in 1952 (Serrão & Simão Neto 1971).

Nobre & Andrade (1976) and Damas (1997) reported that after the dissemination of the Australian variety through seeds, in 1972, this forage spread throughout the country, and numerous outbreaks of FTS in animals kept in these pastures began to occur (Döbereiner et al. 1976, Seixas et al. 2016).

Several studies have contributed to further clarifying the subject, having as key points the isolation of compounds from samples of grasses, ruminal and biliary contents and bile crystals from cases of FTS that occurred in various parts of the world in pastures of Urochloa *spp (* Camp et al. 1988, Holland et al. 1991, Salam Abdullah 1992, Smith & Miles 1993, Lajis et al. 1993, Assumaidaee &

Mustapha, 2012, Knupp et al. 2016, Seixas et al. 2016), including from grasses Brazilian (Cruz et al. 2000, 2001, Pires et al. 2002, Brum et al. 2009, Porto et al. 2013). Then, the relationship between FTS and saponins contained in *Urochloa spp* was demonstrated (Meaghear et al. 1996, Cruz et al. 2000, 2001, Brum et al. 2007, Porto et al. 2013, Seixas et al. 2016), and protodioscin has been the main saponin found (Brum et al. 2007, 2009).

In general, intoxications that occur in animals kept on *Urochloa spp pastures* in Brazil have been observed mainly in cattle up to 2 years of age, rarely in animals above this age (Riet-Correa et al. 2002). In the Southeast region of Brazil, the occurrence occurs as soon as the rains start, when the pasture is greener and more lush, or in areas that remain humid during the dry season.

Tokarnia et al. (2012) reported that the clinical signs observed in cattle with FTS are: restlessness, apathy, reduced appetite with consequent weight loss, skin itching, restlessness caused by skin lesions. According to Cruz et al. (2001) the manifestation of FTS occurs after the animal is exposed to the sun, with the presence of erythema, skin edema, and sometimes subcutaneous tissue, followed by necrosis with skin detachment in the most affected parts.

As for *U. radicans* Napper, there are few references in the literature about cases of intoxication. In Costa Rica, Villalobos et al. (1981) cite *U. radicans* as responsible for economic losses in cattle. According to Andrade et al. (1971a), Rosenfeld et al. (1971) and Gava (1993) in Brazil, intoxication by *U. radicans* was diagnosed for the first time, in the state of São Paulo, in cattle grazing in paddocks constituted exclusively by this plant.

U. *radicans* (tanner-grass), currently known as *U. arrecta* (Goes, et al. 2003), *U. radicans* Napper (Tokarnia et al. 2012), or popularly Brachiaria-do-brejo is characterized by being a invasive plant (Lorenzi 1982, Kissmann 1997) that develops rapidly in wetlands and on the shores of lakes and rivers. In Porto Real in the state of Rio de Janeiro it is found mainly in the regions of the Paraíba do Sul River valley. Because of its excellent palatability, *U. radicans* is ingested in large quantities by cattle, and induces intoxication, which is characterized by clinical signs of reddish brown urine and jets, semi-liquid or liquid feces, weight loss, pale mucous membranes, unbalanced gait, urination frequent and rapid breathing (Tokarnia et al. 2012). However, these signs can worsen and end with death, or quickly disappear when the plant is no longer ingested (Rosenfeld et al. 1971, Gava et al. 2010). Still according to Gava et al. (2010) in poisoning by *U. radicans,* there are no references to spontaneous recovery in cattle that remain on these pastures.

According to Villalobos et al. (1981), tanner-grass grass is considered a plant that accumulates nitrates and nitrites, which can reach toxic levels under some conditions. Although some studies carried out in Brazil in the early 1970s associated the toxicity of tanner-grass grass in cattle and buffaloes with excess nitrate in their forage (Andrade et al., 1971a, 1971b; Oschita et al., 1972), according to Villalobos et al. (1981) and Tokarnia et al. (2002; 2012) there are one or more toxic principles not yet identified, in addition to excess nitrate, responsible for hemolytic anemia in animals that graze this grass.

In this context, the objective of this study is to describe two spontaneous cases of intoxication in Nellore bulls during the breeding season kept on pastures containing *U. decumbens and U radicans,* and to verify possible compromises in the spermatogenesis and enzymatic profile of these animals during the intoxication period..

MATERIALS AND METHODS

Study local and contextualization. The experiment was conducted at Fazenda Remon Agropecuária LTDA for raising beef cattle, of the Nellore breed. The property is located in the municipality of Porto Real/RJ, located at 22 º25'11" South latitude and 44 º17'25" West longitude, average altitude of 385 metros, with a climate characterized by dry winter and rainy summer, with index annual rainfall of around 1500 mm and an average annual temperature of 20.5 ºC (SIMERJ, 2022).

The property consists of 2.500 hectares, 80% of which are located on the banks of the Paraíba do Sul River, where *U. radicans* predominates along with *U. decumbens. In the pre-breeding season (August to December), the farm acquired 36 Nellore (B. taurus indicus)* bulls over 30 months old, with a body condition score (BCS) > 6 on a scale of 1-9 used for beef cattle (Nicholson & Butterworth. 1986), approximate average weights of 550.3±22.1 kg and andrologically evaluated for the extensive regime of continuous natural mating, according to the CBRA (2013).

After being incorporated into the farm herd (60 days), two of the Nellore bulls that were handled in a paddock with a predominance of grasses *U. decumbens* and *U. radicans,* showed clinical signs of intoxication. In view of the clinical signs presented, the animals were submitted to andrological (respecting the spermatogenic cycle of the species) and enzymatic (AST and ALT) tests 60 days after being allocated in the paddock and 60 days after their removal from the paddock with these types of grasses.

Samples collection. The andrological evaluation was performed according to the recommendations of the CBRA (2013) and Melo (2005). Semen collection was performed by electroejaculation (Aütomatic Biocom ® Electroejaculator). To perform the biochemistry, blood samples were collected by puncture of the external jugular vein, without excessive tourniquet of the vessel, using a vacuum system, in siliconized glass tubes and without anticoagulant. The samples were kept at room temperature to facilitate clot retraction and then centrifuged at 1000 G for 15 minutes, for adequate clot syneresis to occur. -20 °C until it is sent for testing at the Laborlife Analisis Clínicas Laboratory, Botafogo - RJ.

AST serum enzyme activity was determined by means of a kinetic UV test, using a commercial kit (Labtest ®), with reading of the catalytic activity carried out in a spectrophotometer (Clinline 150 from Biomérieux ®), with a wavelength equal to 340 nm, at a temperature of 25 ° C and the values obtained expressed in U/l, as recommended by Schmid and Forstner (1986).

Serum ALT enzyme activity was determined by means of a calorimetric kinetic test, using a commercial kit (Labtest ®), with reading of the catalytic activity carried out in a spectrophotometer (Clinline 150 from Biomérieux ®), with a wavelength equal to 405 nm, at a temperature of 25 ° C, and values obtained expressed in U/l, according to recommendations by Persijn and Slik (1976), Schmid and Forstner (1986).

Statistical analysis. All statistical procedures followed the specifications contained in the GraphPad Prism ® version 4.0 for Windows ® (Motulsky, 2003). To verify the adherence of the experimental errors to normality, the program analyzes the deviations from the Gaussian distribution, and provides a P value for the approximation proposed by Dallal and Wilkinson (1986) to the Lilliefors method (1976).

For the comparative analysis of qualitative data (body condition score, testicular consistency and vigor), the GraphPad Prism® version 4.0 for Windows® program was also used, using the non-parametric Kruskal-Wallis analysis. This analysis assumes that

the distribution is not Gaussian, and provides the value of P. In this case, the program uses the Dunns method as a test for multiple comparisons.

RESULTS

Animals. Of the 36 animals acquired for the breeding season, only 2 breeders (8.3%) showed clinical signs of intoxication. During the evaluated period (6 months), pastures were bad due to drought, only green pasture of *U. decumbens and U. radicans* (tanner-grass) in the lower areas and on the banks of the Paraíba do Sul River.

Epidemiological and clinical data. During the anamnesis and clinical examinations, semi-pasty to liquid stools were observed (Figure 1), amber urine and in jets (Figure 2). In the clinical and andrological examinations of the two bulls, 60 days after the animals entered the pasture, the presence of erythema, edema of the skin and subcutaneous tissue, followed by necrosis with detachment and desquamation of the skin, mainly in the posterior region of the limbs (Figure 3), lesions on the foreskin, with formation of crusts and wounds on the preputial sheath (Figure 4) and pink colored ejaculates (Figures 5).

Fig 1. Lot of Nellore bulls presenting semi-pasty to liquid feces, after grazing for 60 days in paddocks of *Urochloa radicans,* in Porto Real, RJ.

Fig 2. Nellore bull showing amber and flowing urine after grazing for 60 days in paddocks *Urochloa radicans,* in Porto Real, RJ.

Fig 3. Nellore bull showing signs of photosensitization such as edema of the skin and subcutaneous tissue, followed by necrosis with detachment and peeling of the skin, mainly in the posterior region of the pelvic limbs and scrotum, after grazing for 60 days in paddocks of *Urochloa decumbens,* in the Municipality of Porto Real, RJ.

Fig 4. Nellore bull presenting injury to the prepuce, with formation of crusts and wounds in the preputial sheath, after grazing for 60 days in paddocks of *Urochloa radicans radicans,* in the city of Porto Real, RJ.

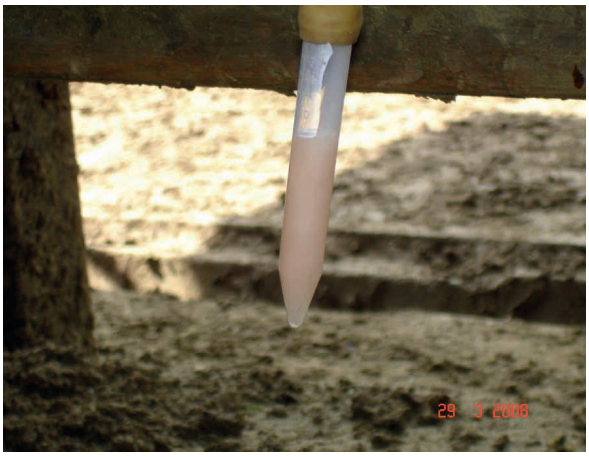

Fig 5. Semen collection in Touro Nellore by electroejaculation, being observed a pink ejaculate, after grazing for 60 days in paddocks of *Urochloa radicans,* in Porto Real, RJ.

Seminal and enzymatic analyzes (AST and ALT). For the seminal and enzymatic characteristics, the values found are presented in Table 1. It can also be observed in this table, the values obtained in the evaluation of the animals in the pre-breeding season (before being allocated in the paddock with U. decumbens and *U. radicans* "tanner-grass", at 60 days (when they showed signs of intoxication) and at 120 days, that is, two months after removing the animals from the paddock that contained the two grasses.

cattle	Taurus A			Taurus B			batch average		
Collections parameters	D_0	$D60_-$	D_{120}	D_0	$D60_-$	D_{120}	D_0	$D60_-$	D_{120}
CP (kg)	549.0	516.2	559.6	552.4	523.2	567.2	550.3±22.1	592.2±31.2	622.8±26.7
ECC (1-9)	6.0	5.0	6.0	6.0	5.0	7.0	6.0±.0.9	7.0±0.8	7±0.6
PE (cm)	31.7	31.1	31.9	32.0	31.2	32.3	32.6±1.7	33.1±0.5	34±0.5
CT (1-5)	3.0	2.0	3.0	4.0	2.0	3.0	4.0±0.2	4.0±0.3	4.0±0.4
Vol. (mL)	7.6	5.5	7.3	6.0	5.1	8.0	7.5±0.7	8.0±0.5	8.7±2.7
Reason (%)	76.0	15.0	83.0	90.0	10.0	81.0	86.0±4.2	81.0±0.9	90.8±4.9
Vig. (0-5)	3.0	1.0	3.0	4.0	2.0	4.0	3.6±0.5	3.8±0.7	4.0±0.2
Conc./mm^3 ($x10^4$)	92.0	34.0	122.0	84.0	44.0	130.0	113.0±21.2	94.0±6.9	112.0±8.8
Conc./ejac.($x10^7$)	699.2	187.0	890.6	504.0	224.4	1040.0	847.5±3.7	752.0±3.8	974.4±2.7
Normal SPZ (%)	67.0	31.0	73.0	69.4	42.0	73.8	71.0±2.4	75.0±.2.3	79.4±6.5
MD (%)	5.4	5.5	4.8	4.1	4.5	4.2	4.5±0.2	4.5±0.7	3.8±0.6
TD (%)	26.8	29.5	27.6	25.6	28.8	26.1	26.8±0.1	27.1±0.3	27.7±0.5
CAP	81.0	41.0	76.0	79.0	48.0	82.0	84.4±2.1	70.4±5.6	87.9±4.9
AST (U/l)	42.0	71.2	47.4	37.6	82.7	44.4	41.2±2.3	65.5±19.1	46.3±3.2
ALT (U/l)	21.4	43.7	19.3	22.6	53.1	24.0	19.8±3.1	21.5±4.2	21.0 ±1.2

Caption: CP = weight condition, BCS = body condition score, PE = scrotal circumference, CT = testicular consistency, Vol. = volume, Mot. = motility, Vig. = vigor, Conc./mm^3 = sperm concentration/mm^3 and Conc./ejac. = sperm concentration/ejaculate, SPTZ = normal spermatozoa, DM = major defects, DT = total defects, CAP = andrological classification by points, AST = aspartate aminotransferase and ALT = alamin aminotransferase.

Table 1 - Values of the physical, andrological and enzymatic characteristics of two bulls (A and B) with intoxication, in a batch of 36 Nellore bulls, kept in paddocks with ***Urochloa*** *radicans* and ***Urochloa*** *decumbens.*

DISCUSSION

Photosensitization is a biophysical phenomenon that occurs when the skin becomes sensitive to certain wavelengths of sunlight in the presence of specific intraepithelial photodynamic agents (Andrews et al. 2004), which results in skin lesions (edema, pruritus, dermatitis, desquamation of the skin in depigmented and exposed areas such as ears, face, buttocks, flank and vulva regions, skin necrosis and crusts), nasal secretion and photophobia, anorexia, weight loss and leather depreciation and, eventually, death of the affected animals (Tokarnia et 2012, Low 2015, Knupp et al. 2016).

According to Oliveira et al. (2013) this disease has been diagnosed for many years in different animal species and causes problems in herds around the world. In Brazil, the first reports on the occurrence of photosensitization were made by Hutton (1975).

Knupp et al. (2016) reported that there are three forms of photosensitivity, primary (type 1), congenital (type 2) and hepatogenous or secondary (type 3). According to Radostits et al. (2007) in type 1, photosensitization is the primary manifestation, which arises due to the ingestion of exogenous substances with effects of photodynamic action. Congenital (type 2) photosensitivity, which is rare in domestic animals, is associated with abnormal metabolism of porphyrins with pigment synthesis (Knupp et al. 2016) and type 3, or secondary, photosensitivity, which occurs when the liver's ability to excreting phylloerythrin, a pigment derived from the breakdown of chlorophyll in the digestive tract, is impaired (Haargis & Ginn, 2007). The presence of steroidal saponins in the chemical composition of brachiaria (*Urochloa spp*) was identified as the causal agent of liver damage in Brazil (Brum et al. 2007, Tokarnia et al. 2012).

As for *U. radicans,* during the period in which the animals were evaluated (July to December), most of the pastures were dry, with the exception of this grass which, due to its presence in a large area around the Paraíba do Sul River and in the paddocks where the animals met, it was green and lush, and that, added to the fact that it presented good palatability, certainly made the animals consume it in large quantities. Regarding the clinical signs presented by the intoxicated animals, it is difficult to point out all of them, since there was also the presence of *U. decumbens* in the same paddocks, which may have masked some clinical signs. However, it was possible to observe reddish-brown and squirting urine, liquid stools, weight loss, pale mucous membranes and frequent urination, which characterizes intoxication, as reported by Tokarnia et al. (2012).

According to Gava et al. (2010) natural intoxications occur within a few days (3rd ^{to} 4th $^{)}$ after introducing the animals to the pasture, signs that worsened after the 6th ^{to} 7th ^{day} of exclusive grass consumption. However, in the present study, the animals were taken to the corral for andrological evaluation every 15 days, thus, when clinical signs were observed, they had probably been manifesting for a few days.

Generally, cases of poisoning by *U. radicans* occur in animals aged less than 16 months, when allocated in pastures with a predominance of this grass (Tokarnia et al. 2012). However, in the present study, the animals were all adults over 30 months old, males, of the Nellore breed, with an average of 550.3±22.1 kg, a category that had not yet been reported in the literature for this type of animal. intoxication. However, the plausible explanation for the intoxication that occurred is due to the fact that the paddocks where the animals were allocated showed a predominance of these grasses, as well as the long period in which the animals remained

in the paddock (approximately 6 months). In this context, intoxication by both *U. radicans* and *U. decumbens* is due to the fact that the animals did not have access to another source of food besides the grasses mentioned during the study period.

Tokarnia et al. (2012) and Pessoa et al. (2013) reported that outbreaks of hepatogenic (secondary) photosensitivity are frequently diagnosed in cattle and sheep, and cause significant economic losses, not only due to the risk of death, but also due to reduced productivity. In Brazil, among the main plants that cause secondary photosensitivity, there are those that contain steroidal saponins (*Urochloa spp*) as reported in this study.

In the analysis of the data presented in Table 1, it is possible to verify the alteration of practically all the characteristics evaluated in the sires (physical, seminal and enzymatic) during the period of clinical diagnosis pre and post-intoxication (0, 60 and 120 days) of the two sires (Bulls A and B). It is also noted that even though the clinical intoxication of only 2 of the 36 bulls placed in the paddock containing *U. decumbens and U. radicans was perceptible,* the other animals could also have had their seminal characteristics affected, given that they had reduced characteristics physical changes and increase in the enzymatic values of AST and ALT, even these being within the reference limits for the species.

Comparing the physical, seminal and enzymatic values of the intoxicated animals, it can be noted that both presented a decrease in CP, ECC, testicular biometry and CT. As well as an increase in the percentages of seminal pathologies DMA, DT and in the enzymatic profile of AST and ALT in relation to the entry into the paddock containing the two grasses. However, the normalization of the characteristics and the absence of signs of intoxication are verified 60 days after the removal of the animals to a paddock without U. *decumbens and U. radicans.*

The average AST values found for Nellore beef cattle that presented clinical intoxication were 71.2 U/l and 82.7 U/l for bulls A and B respectively, a value higher than that found for the average 46.3 ±3.2 of the other animals (batch) that did not present clinical intoxication (Table 1). These values were higher than those obtained by Barros Filho (1995), who, when working with Nellore bulls aged between 25 and 36 months, obtained 30.9±6.8 U/l for this enzyme, also higher than the values obtained by Fagliari et al. (1998), Fioravanti (1999), Amorim et al. (2003), Brum (2006) and Moreira et al. (2009), all in studies with Nellore animals.

The values found for ALT in the two intoxicated bulls (A and B) were 43.7 U/l and 53.1 U/l, well above the 25 U/l recommended by Gregory et al, (1999). However, the animals that did not manifest clinical intoxication maintained values considered normal for this species and category (21.5±4.2 U/l) during the period in which the intoxication of animals A and B occurred, a value that is normal for the evaluated category, values similar to those reported by Gregory et al, (1999).

In view of the clinical results found and based on the mentioned works, it can be affirmed and proposed that, under Brazilian conditions, the serum activity values of AST, in healthy cattle, must not exceed 50 U/l, while for ALT they must not exceed 25 U/l, and could be used for the early recognition of liver disease.

The increase in AST and ALT levels was probably due to the presence of some toxic substances present in *U. decumbens* (saponins) *and U. radicans* (nitrate/nitrite), data that corroborate those of Andrade et al. (1971a, 1971b), Oschita et al. (1972), Villalobos et al. (1981), Tokarnia et al. (2002), Wina et al. (2005), Radostits et al. (2007). Thus, the continuous grazing of this grass by cattle can

generate economic losses, as reported by other researchers such as Villalobos et al. (1981) and Pessoa et al. (2013). However, Gava et al. (2010) based on comparative studies between poisoning by *U. radicans* and by nitrate/nitrite in pastures of ryegrass and oats in Santa Catarina, believed that the disease produced by *U. radicans* was not related to nitrates/ nitrites, whose picture is different, both in clinical and pathological aspects. In the case of intoxication by *U. radicans,* hemolysis occurs and in intoxication by nitrate/nitrite, it is usually very fast or courses with lethargy and moderate tympany, which was not seen in bulls intoxicated by *U. radicans.*

Riet-Correa et al. (2011) reported that in most cases the stage of plant growth is also important, as saponin concentrations are higher in growing plants, but outbreaks occur throughout the year, probably due to an unexplained increase in saponin concentrations in the plant. plant. This, in a way, helps to explain why several clinical signs of poisoning by *U. radicans* were observed, because as the animals were evaluated in a dry period from August to December, U. *decumbens* was drier (consequently with a lower concentration of saponins), which led the animals to ingest a greater amount of *U. radicans,* which, being close to the banks of the Paraíba do Sul River, was green and lush, and therefore was more consumed than *U. decumbens.*

Several studies carried out in recent decades (Keller-Grein et al. 1996, De Oliveira et al. 2004, Gracindo et al. 2014) point out that in Brazil there are currently more than 50 million hectares of *Urochloa spp pastures.* This demonstrates that the cases of intoxication and photosensitization occurring in cattle in the country may be much higher than reported in the literature, bearing in mind the continental dimensions of Brazil.

Despite the several cases of intoxication and FTS reported in the literature in ruminants in Brazil (Tokarnia et al. 2012, Oliveira et al. 2013), many owners and veterinarians are unaware of the risk posed to animals when they are allocated in exclusive pastures and paddocks with these grasses (*U. decumbens and U. radicans*), for several days, weeks and even months.

There are several reasons why these grasses are present on most Brazilian properties, among them the following: U. *decumbens* is a pasture resource for cattle and wild animals, growing at a variety of altitudes from 500 to 2300 m (Low 2015); produce more dry matter than most tropical grasses during the dry season (Bulo et al. 1994); be capable of producing tens of tons of dry matter/hectare/ year; have good ability to respond to small amounts of rain that occur in the dry season due to the extensive root system (Bulo et al. 1994, Guenni et al. 2002). The *U. Radicans,* due to its ability to adapt to wetlands (swamps, rivers, lakes, dams and lowlands), to have a high production of green mass, to remain green and lush most of the year, even during the dry season and to spread quickly, without major cultural treatments, it is considered an invasive plant that occupies large areas in a short period of time.

It is extremely important to observe the conditions in which the breeders are found during the pre-breeding season and carry out andrological examinations, to avoid economic losses with a high rate of non-pregnant females at the end of the season.

In view of the above, the owners must be careful with the handling of the animals, avoid that they remain for a long time in paddocks where there are only these grasses, provide abundant shade for the animals when they are in pastures with these brachiaria, remove the animals from the pastures when they notice clinical signs of intoxication and offer other options for bulky food (Gava et al.

2010 and Tokarnia et al. 2012), replace part of the pastures that have these two grasses with others that do not cause hepatic intoxication or FTS and select more resistant animals. It is not always possible.

CONCLUSIONS

Breeders kept on pastures consisting exclusively of *U. decumbens and U. radicans* for a period exceeding 60 days developed clinical alterations that intensify with the continuous ingestion of these forages, which can induce changes in physical, seminal and enzymatic characteristics.

The animals developed intoxication consistent with FTS caused by *U. decumbens and* hemoglobinuria characteristic of intoxication by *U. radicans,* according to the clinical signs observed.

The removal of the animals from the pasture areas constituted exclusively by these grasses was enough to reverse the intoxication conditions, provided other types of roughage were provided.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest.

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Figure Legends

Fig.1. Lot of Nellore bulls presenting semi-pasty to liquid feces, after grazing for 60 days in paddocks of *Urochloa radicans,* in the city of Porto Real, RJ.

Fig.2. Nellore bull showing amber urine and in jet, after grazing for 60 days in paddocks of *Urochloa radicans,* in Porto Real, RJ.

Fig.3. Nellore bull showing signs of photosensitization such as edema of the skin and subcutaneous tissue, followed by necrosis with detachment and peeling of the skin, mainly in the posterior region of the pelvic limbs and scrotum, after grazing for 60 days in paddocks of *Urochloa decumbens,* in Porto Real, RJ.

Fig.4. Nelore bull presenting injury to the foreskin, with formation of crusts and wounds in the preputial sheath, after grazing for 60 days in paddocks of *Urochloa radicans,* in the city of Porto Real, RJ.

Fig.5. Semen collection in Touro Nellore by electroejaculation, with pink ejaculate, after grazing for 60 days in paddocks of *Urochloa radicans,* in Porto Real, RJ.

Table Titles

Table 1. Values of the physical, andrological and enzymatic characteristics of two bulls (A and B) with intoxication, in a batch of 36 Nellore bulls, kept in paddocks with *Urochloa radicans* and *Urochloa decumbens.*