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Short communication

Congenital malformations and other reproductive losses in goats due to poisoning by *Poincianella pyramidalis* (Tul.) L.P. Queiroz (=Caesalpinia pyramidalis Tul.)

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ABSTRACT

In the semiarid region of Brazil, in areas with vegetation composed mainly of *Poincianella pyramidalis*, several cases of congenital malformation and reproductive losses were observed in goats and sheep from 2012 to 2014. To determine the teratogenic effect of *P. pyramidalis*, two groups of eight goats each were used. Goats from Group 1 received fresh *P. pyramidalis*, harvested daily, as the only roughage during the whole breeding and pregnancy period. Goats in Group 2 (control) received *Cynodon dactylon* (tifton) hay free choice. Ultrasound examination for pregnancy diagnosis was performed every 28 days. Four goats from Group 1 were pregnant on day 28 but not on day 56, suggesting embryonic death or abortion. Another goat from Group 1 died at day 70 of pregnancy, and the fetuses exhibited micrognathia. The other three goats bore six kids, three of which showed bone malformations in the limbs, spine, ribs, sternum, and head, including arthrogryposis, scoliosis and micrognathia. One kid also showed hypoplasia of the left pulmonary lobes. In the control group, all goats bore a total of 13 kids and none of them exhibited malformations. These results demonstrated that *P. pyramidalis* causes congenital malformations and other reproductive losses in goats.

Poincianella pyramidalis (Tul.) L.P.Queiroz (= *Caesalpinia pyramidalis* Tul.) (Fig. 1) is a leguminous shrub popularly known in Brazil as “catingueira,” “catinga-de-porco,” and “pau-de-rato,” among other names. The plant is endemic in the semiarid region of northeastern Brazil, in the biome known as *caatinga* (Queiroz, 2009).

Abortions and congenital malformations are important causes of reproductive losses in ruminants in the semiarid region of northeastern Brazil. Studies performed by researchers in the northeast region of Brazil showed that *Mimosa tenuiflora* (known in Brazil as “jurema preta”) causes embryonic death, abortion, and malformations in goats and sheep (Pimentel et al., 2007; Santos et al., 2012; Dantas et al., 2012). The teratogenic effect of *M. tenuiflora* has also been experimentally verified in pregnant rats (Medeiros et al., 2008). *Aspidosperma pyrifolium* (known in Brazil as “pereiro”) is another common plant in that region, which causes abortion and embryonic death in goats (Medeiros et al., 2004).

In the municipality of Uauá, a semiarid region of Bahia with a predominant vegetation composed of *Poincianella pyramidalis* (Tul.) L.P. Queiroz, outbreaks of congenital malformation (Fig. 2A) and reproductive losses were observed in goats and sheep from 2012 to 2014 in several farms with rare occurrence of *M. tenuiflora* and *A. pyrifolium*, suggesting the possible teratogenic effect of *P. pyramidalis*. Thus, the objective of this study was to evaluate the teratogenic effect of *P. Pyramidalis* in pregnant goats.

The experiment was performed in a farm located in the

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Fig. 1. *Poincianella pyramidalis* (Tul.) L.P. Queiroz. Inset: pods and leaves.

Fig. 2. **A**: Natural case of congenital malformation in sheep characterized by cheiloschisis. **B**: Two experimental cases showing arthrogryposis of the forelimbs. **C**: Kid #8 showing severe malformations, including deformity of the eyeball and arthrogryposis in all four limbs. **D**: Macerated head of kid #8 showing severe malformations of the maxilla and mandible.

municipality of Uauá, in the state of Bahia, northeast region of Brazil. Sixteen does with ages varying from 15 to 36 months, crossbred or purebred Anglo-Nubian and Saanen, were included in the study. Initially, the does were subjected to ultrasound examination to confirm a negative pregnancy diagnosis, and the two bucks were subjected to reproductive examination and semen evaluation to determine their reproductive status. The goats were divided into two groups of eight animals each (Groups 1 and 2). Group 1 received as the only forage source fresh *P. pyramidalis* collected daily throughout the coverage period and throughout pregnancy. A voucher specimen of the plant was authenticated (HUEFS 170030) and deposited in the Herbarium of the State University of Feira de Santana. The eight goats in Group 2 did not receive the plant (control group) but instead had tifton grass (*Cynodon dactylon*) hay *ad libitum*. In addition, all animals (Groups 1 and 2) received the equivalent of 1% of body weight of a commercial concentrate ration (Ovinotech Nestlé Purina) and water *ad libitum*. The goats from each group were housed in different stalls, and until