

## **EXPERIMENTAL INTOXICATION BY *Cnidoscolus phyllacanthus* (FAVELEIRA) IN GOATS**

**OLIVEIRA D. M. (1), GALIZA G. J. N. (1), ARAÚJO J. A. S.(2), MEDEIROS R. M. T. (3), RIET-CORREA F.(3), DANTAS A. F. M.(3).**

(1) Aluno do curso de Med. Vet., UFCG/CSTR, Patos-PB, (2) Hospital Veterinário, UFCG/CSTR, Patos-PB, (3) Hospital Veterinário, UFCG/CSTR, Patos-PB, Email: diegomedeiroscaj@yahoo.com.br

*Cnidoscolus phyllacanthus* (Euforbiaceae) (faveleira) is a common plant in the caatinga. Occasionally the dry plant is used as forage, and during the dry season, animals normally consume the fallen dry leaves. Spontaneous intoxication by this plant is reported by farmers in the semiarid. To determine the toxicity of the plant, it was administered to Moxotó goats, 7-24 months old. Initially the green plant was given to one goat orally by putting small amounts in the mouth. After the consumption of 4.7g/kg bw the goat had severe clinical signs characterized by tachycardia, dyspnoea with severe respiratory distress, nystagmus, opisthotonus and sternal decubitus, and died in 30 minutes. The plant was dried in the shade for 8, 9 and 10 days and given to 3 goats. The goat that ingested the plant dried for 8 days died after the ingestion 3g/kg bw of dry plant. The goat that ingested the plant dried for 9 days had clinical signs and recovered after the ingestion of 1.13 g/kg bw.. The goat that ingested the plant dried for 10 days showed mild clinical signs and recovered after the ingestion of 30g/kg bw. The fresh plant was administered to 8 goats at doses from 0.5 to 3g/kg bw. Doses of 0.5 to 2.5g g/kg bw caused no clinical signs. Three goats had clinical signs after the ingestion of 3g/kg bw. Because clinical signs were similar to those observed in the intoxication by HCN, 2 goats were treated with 20% aqueous solution of sodium tiosulfate at 0.5ml/kg bw, and recovered rapidly after treatment. The plant was strongly positive to the picrated paper test for HCN. These results demonstrated that *C.phyllacanthus* is a cyanogenic plant that causes intoxication after the ingestion of the green plant. Like other cyanogenic plants it loss its toxicity after been dried.

**KEY WORDS:** toxic plants, cyanogenic plants

**FINANCIAL SUPPORT:** Instituto do Milênio, Processo 420012/2005-2, CNPq

**CORRESPONDENCE TO:** Rosane M. T. Medeiros. Hospital Veterinário, CSTR, UFCG, Patos PB, 58700-000. Email: [rmtmed@uol.com.br](mailto:rmtmed@uol.com.br)

**PRO-INFLAMMATORY ACTIVITY INDUCED BY A KUNITZ-TYPE INHIBITOR  
FROM *Dimorphandra mollis* SEEDS**

**DE MELLO G.C. (1), DE SOUZA I.A. (1), MACEDO M.L.R. (2,3), ANTUNES E. (1)**

(1) Department of Pharmacology, Faculty of Medical Sciences, State University of Campinas (UNICAMP), Campinas/SP, Brazil; (2) LPPFB, Department of Biological Sciences and the Health/UFMS – Três Lagoas/MS; (3) Department of Biochemistry, Institute of Biology, UNICAMP, Campinas/SP, Brazil.

Plant proteinase inhibitors have been described as useful tools in biochemical and physiological studies to understand the proteinase functions in human pathologies, e.g., hemorrhage, inflammation and cancer. In a recent study, we have investigated the oedematogenic activity of DMTI-II (20 kDa), a serine proteinase inhibitor Kunitz-type isolated from *D. mollis* (Leguminosae-Mimosoideae) seeds. Injection of DMTI-II (3–100 mg/paw) induced a dose-dependent rat paw oedema of rapid onset and short duration, where mast cells and sensory fibers seem to play a pivotal role (1). Since this proteinase inhibitor is known to present inflammatory activity, this study aimed to investigate the leukocyte migration induced by DMTI-II. Male Wistar rats (180-200g) were intraperitoneally injected with DMTI-II (3-30 mg/cavity). Four and sixteen h thereafter the total and differential leukocyte counts were performed in peritoneal lavage fluid. DMTI-II (10 mg/cavity) induced significant total leukocyte accumulation at 4 and 16 h after injection. Neutrophil and eosinophil counts were increased at 4 h (16 and 14-fold increase, respectively), reaching a maximum response at 16 h (22 and 17-fold increase, respectively). The presence of early eosinophils starting from 4 h is not a common event in the experimental models of the inflammatory response. Further investigation is necessary to elucidate the mechanism of DMTI-II action as well as the inflammatory mediators involved.

**KEY WORDS:** *Dimorphandra mollis*, Kunitz-type inhibitors, inflammatory activity

**REFERENCE:** 1. Mello, G.C. et al. Oedematogenic activity induced by Kunitz-type inhibitors from *Dimorphandra mollis* seeds. *Toxicon*, 2006, 47: 150-155.

**FINANCIAL SUPPORT:** CAPES and CNPq

**CORRESPONDENCE TO:** GLÁUCIA C MELLO, Department of Pharmacology, Faculty of Medical Sciences, State University of Campinas, SP, Brazil. Postal Code 6111; CEP 13084 973. Email: [glaumello@terra.com.br](mailto:glaumello@terra.com.br)

## EFFECT OF PIPERACEAE EXTRACT IN SCHISTOSOMIASIS VECTOR

RAPADO LN (1), KATO MJ (2), KAWANO T (1).

(1) Lab Parasitology and Malacology, Institute Butantan, São Paulo, Brazil; (2) Lab. Chemistry, University São Paulo, São Paulo, Brazil.

Schistosomiasis occurs in 54 countries mainly in the South America, the Caribbean, Africa and east of the Mediterranean. In Brazil, 5-6 million people are infected and 30 thousand are exposed to infection risk. One of the methods more efficient to control this disease is molluscicides application that eliminates or reduces the intermediate host population. Concerning to with the environmental preservation, the high cost and recurrent resistance of snail to the synthetic molluscicide has been stimulated the study of molluscicides with plant origin. The extracts from the Piperaceae family has a diversified and bioactive chemistry compounds such as essential oils, unsaturated amides, pyrones, flavonoids, monoterpenes, sesquiterpenes, arylpropanoids and lignoids. It was studied the molluscicide action of the Piperaceae on adult snails of *Biomphalaria glabrata*. Studies with 13 plant species had been carried through, totalizing 15 extracts from stem, leaf and root. Screening was performed to choose a better molluscicide and snails were submitted to the concentrations of 100ppm and 500ppm from each extract. In eleven extracts the mortality rate with 100ppm was obtained 100%, then they were studied at the lower concentrations to get less lethal concentration. The leaf extracts of following plants had presented acute toxic effect with 100% of mortality in snail at the *Piper crassinervium* (60ppm), *Piper hostmannianum* (40ppm), *Piper diospyrifolium* (30ppm), *Piper cuyabanum* (20ppm) and *Piper aduncum* (10ppm). Due to the good molluscicidal action these extracts had been fractioned and submitted to blastula, gastrula, trochophore and veliger stage of *B. glabrata* for the study of the ovicida effect.

**KEY WORDS:** *Biomphalaria glabrata*, Schistosomiasis, Piperaceae, molluscicide.

**CORRESPONDENCE TO:** Ludmila Nakamura Rapado, Laboratory Parasitology and Malacology, Institute Butantan, Av. Vital Brazil, 1500 CEP 05503-900 São Paulo, São Paulo, Brazil. Phone: + 90 37267222 (2158/2281). Email: [ludmila@butantan.gov.br](mailto:ludmila@butantan.gov.br)

## **INTERACTION AQUEOUS EXTRACT FROM *Schizolobium parahyba* / *Bothrops alternatus* SNAKE VENOM IN THE ANTIPOISON PRODUCTION**

**VALE L. H. F. (1), PINTO J. S. (1), MENDES M. M. (1), RODRIGUES V. M. (1),  
HAMAGUCHI A. (1), HOMSI-BRANDEBURGO M. I. (1)**

(1) Laboratório de Toxinas Animais e Inibidores, Instituto de Genética e Bioquímica, Universidade Federal de Uberlândia, Uberlândia, Brasil

The treatment against envenomation by snakebite is made with antibodies antipoison produced in animals as horses and goats. One of the problems in this production is suffer the used animals with the consecutive immunizations, beyond having a reduced time of life accurately for the toxicity of the used antigen. To decrease these damages in the present work we use the crude aqueous extract of *Schizolobium parahyba* (AE), in the attempt to produce an antiserum from the complex extract/venom of the *Bothrops alternatus* venom (CV). The challenge for the production of antibodies for CV was made for (group 1); CV + AE (group 2) and AE (group 3). Six male rabbits New Zealand (3kg) had been used and distributed for each group (two animals for group). Each animal received six inoculations in intervals of seven days. In the first inoculation the samples of each group had been mixed with complete Freud's adjuvant and the others inoculations with incomplete Freud's adjuvant (1:3 v/v, antigen/adjuvant). Were used 400 mg of CV (group 1); 400 mg of CV + 4000 mg of AE (group 2) and 4000 mg of AE (group 3) in a final volume of 400 ml. The applications had been made in four equidistant places of the animal. The control of plasmatic antibodies levels was made by immunodifusion gel agarose (1.25%). Gels had been prepared to test the levels of antibodies of each animal, applying for all groups as antigen CV, CV/AE and AE. For group 1 the production of antibodies was positive, but for group 2 and 3 it did not occur. In this way AE inhibited the production of antibodies of group 2 and alone did not develop immune response (group 3). An interesting fact was observed in the immunodifusions where AE was present with the antigen. It increased the reaction antigen/antibody improving the visualization of the precipitation complex lines.

**CORRESPONDENCE TO:** [homs@ufu.br](mailto:homs@ufu.br)

**ANTIHEMORRHAGIC ACTIVITY FROM *Schizolobium parahyba* FRACTIONS  
CAUSED BY *Bothrops alternatus* SNAKE VENOM**

**VALE L. H. F. (1), MENDES M. M (1), RODRIGUES V. M (1), HAMAGUCHI A. (1),  
PEREIRA P. S. (2), FRANÇA S. C. (2), HOMSI-BRANDEBURGO M. I. (1).**

(1) Laboratório de Toxinas Animais e Inibidores, Instituto de Genética e Bioquímica, Universidade Federal de Uberlândia, Uberlândia, Brasil; (2) Departamento de Biotecnologia de Plantas Mediciniais, Universidade de Ribeirão Preto, Ribeirão Preto, Brasil.

Plant extracts constitute an extremely rich source of biologically active compounds, and a number of extracts have been shown to possess antivenom activity. This study reports the ability of the fractions of *Schizolobium parahyba* to inhibit hemorrhagic activity of *Bothrops alternatus* snake venom. The crude aqueous extract (AE) was prepared from the leaves by mixing in distilled water, centrifuged and the supernatant was lyophilized and stored at -20°C. AE (10g) was re-solubilized in methanol, centrifuged and the supernatant was evaporated (AEM). AEM (7g) was submitted to fractionation on Sephadex LH-20 and eluted with methanol. Seven fractions were collected. Fractions four and five were submitted to re-chromatography and eleven subfractions were obtained (SPM4.1 to SPM4.5 and SPM5C.1 to SPM5C.6 respectively). These all fractions were submitted to analytic HPLC to analyze the purification degree and possible groups in which this substances belong. Four fractions showed antihemorrhagic activities. Rutin, an antihemorrhage flavonol, was tested too for comparison to SPM4.3 because this fraction has high amount of Rutin. SPM4.3 was tested too in pre-treatment assays (30 min) because Rutin has vessel constriction action and no inhibitory action on hemorrhagical metalloproteinase enzymes. The inhibition of hemorrhage effect was high in the pre-treatment. We concluded that *S. parahyba* aqueous extract possess active compounds with bothropic hemorrhagic action of easy purification in resin Sephadex LH-20 and this compounds resemble to belong to a group of phenolic substances as flavonols and catechins.

**KEY WORDS:** *Schizolobium parahyba*, *Bothrops alternatus*, fractionation, HPLC, antivenom, natural compounds.

**FINANCIAL SUPPORT:** FAPESP, CAPES, CNPq, FAPEMIG, UFU.

**CORRESPONDENCE TO:** Avenida Pará, 1720, Bairro Umuarama, Uberlândia-MG, cep: 38405-320. E-mail: [lhvale@hotmail.com](mailto:lhvale@hotmail.com)

## INTOXICATION AND PHYTOCHEMISTRY STUDY OF *Litch chinensis* IN MARES AFTER SPONTANEOUS INGESTION

MELO M.O. (1), DANTAS-BARROS A.M. (2), FONSECA M. (2), MELO M.M. (1),

(1) Escola de Veterinária, Brazil, UFMG; (2) Faculdade de Farmácia, UFMG; Brazil.

Nine adult mares, showing clinical signs of ataxia, abnormal attitude, lateral recumbency, lethargy, conjunctival congestion, dyspnea, cyanosis, dehydration, hemoptiasis and brownish urine. The blood profile showed anemia, microcytic and hypochromic erythrocytes; leukocytosis, neutrophilia, regenerative left shift, increase of GGT and total bilirubin. All mares died and were submitted to necropsy. The gross findings were hydrothorax, parietal pleura with petechial multifocal hemorrhage, edema and pulmonary congestion, hydropericardio, pericardial and myocardial multifocal haemorrhage. Hepatomegaly and brownish livers were seen. In the small intestine, the presence of hemorrhage and congestion in the serous membranes, and in large intestine a large amount of material that suggest skin-seed mix in ingesta were observed. Neutrophilic endocarditis and myocarditis, in association with fibrous degeneration, edema and pulmonary congestion, focal acute splenic infarctation and liver degeneration were observed microscopically. Rabies and toxicologic (pesticide, artificial fertilizer, mycotoxins, monensin and heavy metals) exams were performed, all showing negative results. All mares were in *Brachiaria* sp. pasture in which area there were trees (*Litch chinensis* Sonn). In order to confirm the diagnosis, four animals were separated and fed with whole mature fruits from *L. chinensis*. After 5th day of fruit administration, all animals showed the same signs, gross and microscopic lesions as described above, confirming the intoxication. The routine phytochemistry study was performed into four parts of the fruit of *L. chinensis*: almond, skin of the almond, comestible pulp and outside skin of fruit. Heterosids flavonols, polyphenols, saponins were observed. Coumarins were observed only in the almond and were evaluated by thin layer chromatography. Identified components could be responsible for the toxic effects observed, considering that saponins can cause hemolysis, coumarins are mucous irritants and flavonoids could cause cardiac stimulation.

**KEY WORDS:** mare, intoxication, *Lich chinensis*, phytochemistry.

**CORRESPONDENCE TO:** Marilia Melo, Lab.Toxicologia, UFMG;  
[marilia@vet.ufmg.br](mailto:marilia@vet.ufmg.br)

**PHARMACOKINETICS OF BOWMAN-BIRCK INHIBITOR FROM *Macrotyloma axillare***

**SANTOS A. G. (1), FONSECA T. B. W. (1), SILVA K. T. S. (1), GOUVEIA DOS SANTOS, R. (2), ANDRADE M. H. G. (1)**

(1) Lab de Enzimologia e Biofísica- ICEB/NUPEB/Universidade Federal de Ouro Preto, (2) Lab. Radiobiologia, Centro de Desenvolvimento da Tecnologia Nuclear/CNEM, Belo Horizonte, MG

There are growing evidences that dietary factors have a tight correlation with different kinds of cancer development. Among the compounds of diet related with cancer development prevention, we could mention the Bowman-Birk Inhibitors. Our group have isolated Bowman-Birk Inhibitors (BBI) from *Macrotyloma axillare* showing high specific inhibitory activities over bovine trypsin and chymotrypsin enzymes, specially from the germinated seeds. In order to study their pharmacokinetics parameters, we radiolabeled *Macrotyloma* and Soybean BBI's, which are by the way, the most studied inhibitors of this class. *Macrotyloma axillare* inhibitors got widely distributed over Swiss mice organs, but they shown an important difference in comparison with soybean inhibitor biodistribution, which is a meaning bigger affinity for the stomach. *Macrotyloma* inhibitor have a distribution volumes of approximately four folds the plasmatic volume and half-life of 14,4 and 7 hours for seed and germinated seed BBI respectively. When applied in isolated intestinal loops of Swiss mice, soybean inhibitors get to almost 50% of bioavailability, while *Macrotyloma axillare* inhibitors from seeds and cotyledons get to 30 and 40% respectively. Meanwhile the biggest potency of cotyledons inhibitor of *Macrotyloma* makes available a bigger activity (approximately nine folds) then soybean inhibitors do.

**KEY WORDS:** Bowman-Birk, Cancer, Phamacokinetic

**FINANCIAL SUPPORT:** CNPq, FAPEMIG

**CORRESPONDENCE TO:** [mguerra@nupeb.ufop.br](mailto:mguerra@nupeb.ufop.br)

**ANTI-INFLAMMATORY EFFECT OF THE AQUEOUS EXTRACT OF *Galactia glaucescens* (Fabaceae)**

DOMINGUES K.C.B. (1), FERRARI E.F., (1), CARREIRO DA COSTA R.S. (1), COGO J.C. (1), ZAMUNER S.R, (1), PRIANTI JR. A.C.G. (1)

(1) Laboratório de Fisiologia e Farmacodinâmica (IP&D) UNIVAP, São José dos Campos, SP, Brazil.

A large number of plants are claimed by popular belief to antagonize some effects produced by inflammation reaction. In this work, we evaluated the capacity of the aqueous extract of vegetal species *Galactia glaucescens* (Fabaceae) to reduce the inflammatory reaction caused by carrageenan. The induction of inflammatory reaction in the peritoneal cavity was induced by carrageenan (500 µg/rat) and the inflammatory exudate was withdrawn after washing the peritoneal cavity to determine total cells counts in neubauer chamber and the differential leukocyte counts were performed on stained Instant Prove cell smears. A group of animals (n=3) was treated with *G. glaucescens* extract (12 µg/Kg) in the peritoneal cavity 30 minutes before the carrageenan injection. Results showed that aqueous extract of *G. glaucescens* did not reduced significantly the leukocyte influx in the treated animals when compared to the control group. Based on these results, we concluded that the extract of *Galactia glaucescens* was not able to neutralize the leukocyte influx induced by inflammatory reaction caused by carrageenan.

**KEY WORDS:** *Galactia glaucescens*, plant extract, inflammation, leukocyte influx.

**FINANCIAL SUPPORT:** Fundação Valeparaibana de Ensino

**CORRESPONDENCE TO:** ANTONIO C.G. PRIANTI JR., IP&D, UNIVAP, São José dos Campos, SP, Brazil., Av. Shishima Hifumi, 2911, Urbanova, 12244-000, São José dos Campos, SP, Brazil. Phone: + 55 (12) 3947-1106. Email: [prianti@univap.br](mailto:prianti@univap.br).

## THE RAT AS AN EXPERIMENTAL MODEL TO STUDY MALFORMATIONS CAUSED BY *Mimosa tenuiflora*

FIGUEIREDO A.P.M. (1) , BENÍCIO T.M.A. (2), DANTAS F.P.M. (1), MEDEIROS  
R.M.T.(3), RIET-CORREA F. (3)

(1) Under graduate student, Veterinary Medicine, Veterinary Hospital, UFCG, Patos, Paraíba, Brazil. (2) Graduate student, Program in Veterinary Medicine in Small Ruminants, Veterinary Hospital, UFCG, Paraíba, Brazil. (3) Veterinary Hospital, UFCG, Patos, Paraíba, Brazil

Malformations as cleft palate, flexure of fore limbs, microphthalmia and scoliosis caused by the ingestion of *Mimosa tenuiflora* are common in goats, sheep and cattle in the Brazilian semi-arid. The aim of this research was to identify a laboratory animal as an experimental model to study the teratogenic effects of *Mimosa tenuiflora*. Twenty five pregnant Wistar rats were used. The experimental group had 15 females and received, from the 6<sup>o</sup> to the 21<sup>o</sup> day of pregnancy, ration containing 10% of *M.tenuiflora* seeds. The control group, with 10 females, received the same ration without seeds of *M. tenuiflora*. There were no significant differences in weight gains, and food and water consumption between treated and control rats. Eighty four malformations were observed in 111 fetuses from the experimental group, and 4 malformations were observed in 58 fetuses from the control group ( $p < 0.05$ ). The more common malformations were cleft palate and scoliosis observed in 33 and 9 treated fetuses, respectively, and in none of the non treated fetuses. Malformations of the cranium were observed in 14 treated fetuses and in none of the non treated fetuses. Other bone malformations were less frequent. The weight and the ossification level of the fetuses of the experimental group were higher than those from the control group ( $p < 0.05$ ). It can be concluded that the seeds of *Mimosa tenuiflora* are non toxic to the mothers, but contain teratogenic substances for the fetuses, and that the rat can be considered a good experimental model to study the malformations caused by the plant.

**KEY-WORDS:** rats, malformations, teratogenic plants, *Mimosa tenuiflora*.

**FINANCIAL SUPPORT:** Instituto do Milênio, Processo 420012/2005-2, CNPq.

**CORRESPONDENCE TO:** ROSANE MEDEIROS, Hospital Veterinário, Centro de Saúde e Tecnologia Rural, UFCG, Campus de Patos, Patos, Paraíba, Brasil, Phone: 55+ 83 3423 3409. Fax: 55+ 83- 3421 3231. Email: [rmtmed@uol.com.br](mailto:rmtmed@uol.com.br)