

Evaluation of effects of ethanolic extract (EE) from *Platonia insignis* Mart. on pilocarpine-induced seizures

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Introduction

Epilepsy is one of the most common serious neurological disorders characterized by recurrent seizures. The search for antiepileptic compounds with more selective activity and lower toxicity continues to be an area of intensive investigation in medicinal chemistry. Various phytochemical and pharmacological studies have been carried out on these anticonvulsant plants¹. *Platonia insignis* Mart. (Clusiaceae), commonly known as “bacuri”, is a thick-skinned fruit, with approximate dimension of an orange, which contains a large quantity of resins. The pulp enclosing the seeds is white, bittersweet, with a pleasant smell and taste. The fruit can be consumed raw or in the form of juice, ice-cream or jam².

A total of 96 rats were treated with either 10 mg/kg ethanolic extract (EE) from *P. insignis* (i.p., EE) or vehicle (saline/Tween 80 0.5%, i.p.). 30 min after the treatments 24 rats from each above group were randomized to pilocarpine hydrochloride administration (400 mg/kg, i.p., P400). Thus there are 4 groups of rats in this set of experiments: group 1, EE and P400 co-administration (n=24); group 2, P400 plus saline treatment (n=24); group 3, EE alone administration (n=24); and group 4, vehicle treatment serves as control (n=24). After the treatments, the animals were recorded in 30 cm x 30 cm chambers with: latency to first seizure (any one of the behavioral indices typically observed after pilocarpine administration: wild running, clonuses, tonus, clonic-tonic seizures), number of animals that died after pilocarpine administration.

Results of latency to first seizure, locomotor activity and neurochemical alterations were compared by one-way analysis of variance (ANOVA) followed by Student-Newman-Keuls test ($p < 0.05$) (Graphpad program Intuitive, Software for Science, San Diego, CA). The number of animals that seized and the number that survived were calculated as percentages (seizures percentage and survival percentage, respectively), and compared with a nonparametric test (χ^2) (Table 1).

Results and Discussion

Table 1: Effect of pretreatment with ethanolic extract (EE) from *Platonia insignis* prior to pilocarpine-induced seizures and lethality in adult rats.

Groups	Latency (min)	Seizures (%)	Survival (%)
P400 (12)	35.0±0.7	100	30
EE plus 400 (12)	154.2±1.5 ^b	30 ^a	80 ^a
EE (12)	00	00	100 ^a

^a $p < 0.0001$ as compared with pilocarpine group (χ^2 -test).

^b $p < 0.0001$ as compared with EE plus pilocarpine group (χ^2 -test).

Conclusion

Ethanolic extract from *P. insignis* pretreatment significantly reduced the lipid peroxidation level and nitrite content after pilocarpine-induced seizures. Our findings strongly support the hypothesis that oxidative stress occurs in striatum during pilocarpine-induced seizures, indicate that brain damage induced by the oxidative process plays a crucial role in seizures pathogenic consequences, and imply that strong protective effect on SNC could be achieved using ethanolic extract from *P. insignis*.

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