Evaluation of possible antioxidant effects of the ethyl acetate fraction from *Platonia insignis* Mart. (Bacuri) on epilepsy models

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Introdução

Platonia insignis Mart. is a member of the Clusiaceae family commonly known as bacuri and is a native species of the Brazilian Amazon that is harvested for timber and fruit. *P. insignis* seed oil has been used to treat various skin diseases in both humans and animals, and the seed decoction has been used to treat human diarrheal and inflammatory diseases[1]. The seeds collected from the fruits of P. insignis were dried at 55ºC under shade and powdered mechanically. 848 g of crush yielded of seeds was extracted with hexane (63%, w/w), followed by 95% ethanol (5.8%, w/w) in a Soxhlet apparatus (8 h for each solvent). In the ethanolic extract it was added 100 mL of water, which was then fractionated using polarity increasing solvents. The ethanolic extract was fractionated with ethyl acetate (7 x 100 mL) to obtain an ethyl acetate soluble fraction. The aim of present study was to examine the effects of the ethyl acetate fraction (EAF) from *P. insignis* on lipid peroxidation level, nitrite formation, and superoxide dismutase and catalase activities in rat striatum prior to pilocarpine-induced seizures. Wistar rats were treated with vehicle, EAF (0.1, 1, and 10 mg/kg), pilocarpine (400 mg/kg, P400 group), EAF + P400.

Resultados e Discussão

The main constituents identified were xanthones (76.19%): alpha-mangostin (M+ 410; 38.26%) and 1,3,5,6-tetrahydroxy-2-(2-methylbut-3-en-2-yl)-7-(3-methylbut-2-enyl)xanthen-9-one (M+ 396, 37.93%). Other relative abundant constituents identified were fatty acids (19.71%) (9-Hexadecenoic acid (0.61%), Hexadecanoic acid (5.21%), heptadecanoic acid (0.61%), 9,12-octadecadienoic acid (0.57%), 10-octadecenoic acid (5.20%), and 9-octadecenoic acid (3.86%)). Other constituents were also identified: di-(9-octadecenoyl)-glycerol (0.72%) and geranyl linalool (1.22%) (**Table 1**).

Significant increases in lipid peroxidation and nitrite levels; however, there were no alterations in SOD and catalase activities. In the EAF 10 + P400 group, lipid peroxidation and nitrite levels significantly decreased and SOD and catalase activities significantly increased after pilocarpine-induced seizures (**Table 2**).

Table 1: Main Compounds detected in the ethyl acetate fraction (EAF) from seeds of *P. insignis* (Clusiaceae).

Compounds of EAF	*Retention Time*	*Relative Area (%)*
9-Hexadecenoic acid	16.084	0.61
Hexadecanoic acid	16.312	5.21
Heptadecanoic acid	16.417	4.26
9,12-Octadecadienoic acid	18.017	0.57
10-Octadecenoic acid	18.091	5.20
9-Octadecenoic acid	18.137	3.86
No identified compound	19.801	0.73
No identified compound	21.325	0.57
Di-(9-octadecenoyl)-glycerol	21.547	0.72
No identified compound	23.372	0.86
Geranyl linalool	27.090	1.22
1,3,6-trihydroxy-7-methoxy-2,8-bis(3-methylbut-2-enyl)xanthen-9-one (α-mangostin)	28.067	38.26
1,3,5,6-tetrahydroxy-2-(2-methylbut-3-en-2-yl)-7-(3-methylbut-2-enyl)xanthen-9-one	29.349	37.93

Table 2: Lipid peroxidation level, nitrite content, superoxide dismutase and catalase activities in rat striatum pretreated with ethyl acetate fraction (EAF) from *P. insignis* prior to pilocarpine-induced seizures

Groups	Parameters			
	Lipid peroxidation level (nmol of MDA/g wet tissue)	Nitrite formation (nM)	SOD activity (U/mg of protein)	Catalase activity (mmol/min/mg of protein)
Control	1.12 ± 0.12	80.55 ± 1.12	2.44 ± 0.19	14.99 ± 0.62
P400	2.19 ± 0.05[a]	156.89 ± 0.67[a]	2.45 ± 0.12	15.09 ± 1.07
EAF 0.1 plus P400	2.18 ± 0.82[a]	145.23 ± 1.85[a]	2.51 ± 0.51	14.89 ± 1.62
EAF 0.1	1.14 ± 0.12	79.95 ± 1.92	2.47 ± 0.35	14.85 ± 1.23
EAF 1 plus P400	2.16 ± 0.32[a]	144.63 ± 1.95[a]	2.53 ± 0.62	15.01 ± 1.34
EAF 1	1.18 ± 0.62	81.05 ± 2.83	2.45 ± 0.95	14.79 ± 2.21
EAF 10 plus P400	1.08 ± 0.12[a,b,c,d]	77.25 ± 0.92[a,b,c,d]	2.63 ± 0.21 [a,b,c,d]	15.82 ± 0.57[a,b,c,d]
EAF 10	1.11 ± 0.16	81.25 ± 1.52	2.43 ± 0.15	14.89 ± 0.98

Legends: MDA – malondialdehyde; **SOD** – superoxide dismutase.

Conclusões

Our results indicate that in the in vivo model of pilocarpine-induced seizures, EAF has antioxidant activity at the doses tested.

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[1]Costa Júnior, J.S.; Almeida, A.A.C.; Tomé, A.R.; Citó, A.M.C.L.; Saffi, J.;Freitas, R.M. *Epilepsy Behav.* **2011**, *22, 678.*