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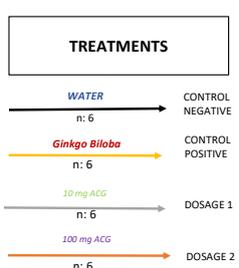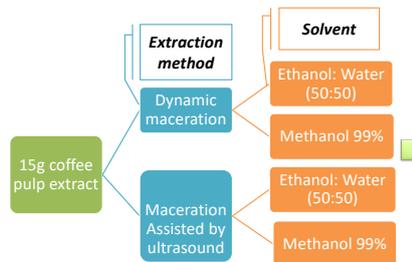
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#IPAP18
Posters

Evaluation of the nootropic activity of arabica coffee pulp extract (*Coffea arabica*).

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Introduction: There are studies that support the antioxidant activity of the coffee pulp, due to the presence of phenolic compounds such as Chlorogenic Acid (CGA), however there aren`t in vivo studies of the nootropic activity.

Aim: To evaluate the nootropic activity of the arabica coffee pulp extract (*Coffea arabica*), which contains a greater quantity of total phenols, with in vivo studies through spatial learning tests using mice of the *mus musculus* species as experimental subjects
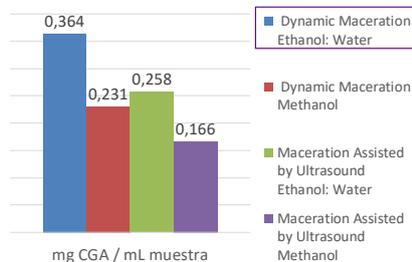
Methodology

Extraction method

15g coffee pulp extract → Dynamic maceration / Maceration Assisted by ultrasound

Solvent: Ethanol: Water (50:50), Methanol 99%

EXPERIMENTATION MODEL
n: 12 females
n: 12 males
Mice *mus musculus BALB/c*

TREATMENTS:
WATER — n: 6 — CONTROL NEGATIVE
Ginkgo Biloba — n: 6 — CONTROL POSITIVE
10 mg ACG — n: 6 — DOSAGE 1
100 mg ACG — n: 6 — DOSAGE 2

TRAINING / EVALUATION

Stadistic Treatment: Mathematical analysis of a mixed linear model

Results

Quantification of Total Phenoles

- 0,364 Dynamic Maceration Ethanol: Water
- 0,231 Dynamic Maceration Methanol
- 0,258 Maceration Assisted by Ultrasound Ethanol: Water
- 0,166 Maceration Assisted by Ultrasound Methanol

mg CGA / mL muestra

The extraction method dynamic maceration using ethanol: water (50:50), obtained more total phenols in the Arabica coffee pulp .

Radial 8 arms maze

Table 1: ANCOVA

	num DF	F-value	p-value
(Intercept)	1	172.87	<0.0001
Treatments	3	12.42	<0.0001
Evaluations day	6	2.01	0.0710
Sex	1	2.04	0.2264
N.Mistakes	1	58.35	<0.0001
Treatments :day	18	1.26	0.2281
Treatments :sex	3	3.73	0.0135
Day :sex	6	2.56	0.0235
Treatments:day:sex	18	1.37	0.1643

There is a significant difference when (P <0.005)
The differences between treatments and the evaluation days depend on the sex of the mice.

Figure 1: *Comparation of Dependent Variable*
Dosage 2 of arabica coffee pulp extract is effective for working memory (mistakes number) and spatial memory (<latency times)

Morris Water Maze

Table 2: ANOVA

	num DF	F-value	p-value
INTERCEPTS	1	405.52	<0.0001
Treatments	3	10.04	<0.0001
Sex	1	11.97	0.0006
Evaluation day	6	10.41	<0.0001
Treatments: day	18	1.27	0.2029
Sexo: días	6	2.12	0.0497
Treatments : sex	3	8.77	<0.0001
Treatment:sex:day	18	0.90	0.5748

There is a significant difference when (P <0.005) The differences between treatments depend on the mice sex; and on the other hand, the differences between sexes depend on the day evaluated
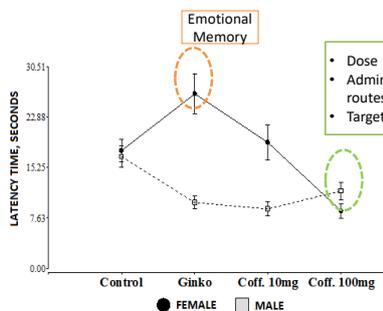

Figure 2 *Latency time*:
Learning and memory are affected by the emotional memory of the experimentation subject and dose 2 of the extract of the coffee pulp has greater effectiveness in both genders.
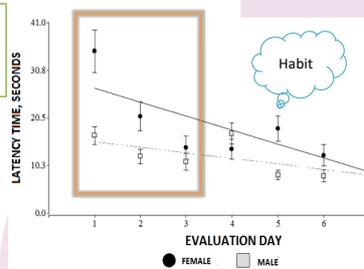

Figure 3 *Evaluation Day*:
It is recommended to evaluate the mice for three days, later the mice are habituated to the spatial learning test

Conclusion: Experimental animals were evaluated in two learning tests and the existence of significant differences between females and males was evidenced, which are linked to physiological and behavioral consequences of the individual. It was proved that the extract of Arabica coffee pulp (Coffea arabica) has nootropic activity, and that the dose 100 mg / kilogram of body weight / day of chlorogenic acid, have greater effectiveness in the improvement of cognitive, learning and memory.

References: 1) Bressani, R., Penaloza, W., Molina, M., & Gomez, R. (noviembre de (1985). 2) Tobón, N. (2015). 3) Solla, I. A. (2016). 4) Wenk, G. L. (2004).