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Original Article

Study potentialities aphrodisiac of the peels of *Buchholzia coriacea* Engl. (caparidaceae) at the male mice

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ABSTRACT

This work is about the study of the aphrodisiac potentialities of the peels of Buchholzia coriacea (Capparidaceae) at the male rat. The acute toxicity has been valued according to the OECD, while managing by oral way the aqueous extract of the plant to the respective doses of 2000 and 5000mg/kg. The mice witnesses had received water distilled to 0,5 ml/100g. The sexual parameters (sexual mounts, erections number; ejaculations number and the time of latency) have been valued after administration by oral way to the male rats the aqueous excerpt of *B. coriacea* (100,250 et500mg/kg per day). The fashion of action of the extract of the plants has been clarified at the rat in presence of the LNAME, the atropine and the haloperidol. The animals receive each 10 mg/kg of consistent antagonist of 100 mg/kg of the aqueous extract of the plant one hour before the mating. He/it is evident from this survey that, the extract of the plant doesn't provoke the death of the mice to the doses of 2000 and 5000 mg/kg. The LD50 is estimated to superior doses to 5000mg/kg. The aqueous of the peels of *Buchholzia coriacea* encourages the meaningful increase (P <0,05; P <0,01 ;PS <0,001) of the sexual parameters at the male rat to the doses of 100 ;250 and 500 mg/kg. The aqueous excerpt of the peels would act as the dopamine and the acétylcholine. The other studies aimed, will complete some information on the aphrodisiac effect of the plants.

Key Word: potentialities- aphrodisiac – *Buchholzia coriacea*

INTRODUCTION

In all societies and even in rural environment, the aphrodisiacs stay in the center of all talk because; they attract the feelings of love and make the object of the shape of experience sharing after their aphrodisiac use. Aphrodisiac is a natural or synthetic substance, capable to stimulate or to restore the sexual desire [19, 21]. They have been known since the ancestral, times and, all then still then the man's passion. In Brazzaville, more than three decades ago, the aphrodisiacs knew a success encouraged or even by the tradipraticiansn of health, the musical works and the non-controlled sale of the aphrodisiac products from animal, plants even synthetic. This is how one mentions here and there, the descended of testes of the kid, some species plant comme *Mondia whitei*, *Accridocarpus congolensis* a medicinal substance, the clomipramine (Anafranil *).

The use of the aphrodisiacs, is not only anxious to satisfy the sexual curiosity, but to the maintenance of the sexual health. Health sexual is also, the physical, emotional, mental, well-being state and society bound to the sexuality [23]. The aphrodisiacs especially of plant origin are used in the erectile dysfunction treatment by the African populations as the Congolese populations. Also, although this one gives a relief, it is necessary to raise the question of innocuousness and the pharmacological action of these plants in the organism. To the multiple medicinal plants of the space plant Congolese presumed aphrodisiac face, *Buchholzia coriacea* Engl. of the family of the Capparidaceae. its peel is used to treat scabies and its roots as A. poison [2].

The scientific studies already tracks reveal several medicinal potentialities of *B. coriacea* Engl. (Capparidaceae). But, in the sexual domain and reproduction, they remain raised less and less. In these optics, the present survey is considered, to study the aphrodisiac potentialities of the aqueous extract of the peels of the trunk of B. coriacea at the male rat.

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MATERIALS AND METHODS

Plant material: The peels of trunk of B.coriacea (Capparidaceae) have been used. They have been harvested in Brazzaville on November 2012. Identification has been made at the laboratory of botany of the Center of study on the Plant Resources (CERVE) of Brazzaville and compared to the sample of reference N° 2456 (IEC) of the 17-2-1968. The drying of the samples harvested has been made to the laboratory, away from the sun during 15 days, to the temperature of 25± 1ºC. After drying, the samples have been ground with the help of a blender.

Animal Material: The male and female albino's rats of Wistar stump of weight between 150 and 200g, in the ages of 4 months have been used. These animals raised to the animalery of the Faculty of sciences of the health had a free access to a standard food and water. Before every experience the animals are put in acclimatization and on an empty stomach during 24 hours.

Preparation of extract: The extract has been prepared by decoction. 75g of powder of *B.coriacea*, have been put into boiling point in 750 ml of distilled water for15 min. After cooling and filtration, the gotten decocty has been concentrated on water bath thermostate to 55ºC, what permitted to get a strong residual of 30 g of *B.coriacea* (output of 40%) of brown color.

Study of the acute toxicity to the mouse: It has been realized basing on the leading line of the OCDE [14]

Nine albinos mice left in three separate groups containing each 3 animals and treated as followed:

- Share 1, witness; the animals received per bone of distilled water to the dose of 0,5 ml/100g of bodily weight
- Share 2 and 3; the animals received per bone the aqueous extracts of the peels of trunk of B. *coriacea* to the respective doses of 2000 and 5000 mg/kg.

After oral unique administration of the products, the observation of the parameters (mobility, vigilance, state of stools ptosis, piloerection….) has been made every 30 minutes as well as the numbering of the number of dead by share during 48 hours. The bodily weight of the animals is then measured the two day during 14 days.

Study of the aphrodisiac effect at the rat: Five (5) shares of five (5) male rats each put on an empty stomach during 24 hours have been constituted and treated during seven days as followed:

- Share 1 witness, received distilled water to the dose of 0.5 ml/100g of bodily weight;
- Share 2, the animals received standard drug, the yohimbine to the dose of 1 mg /kg;
- Shares 3, 4 and 5, the animals received the aqueous extract of *B.coriacea* respectively to the doses of 100, 250 and 500 mg/kg to the bodily weight.

All products have been administrated by oral way. On the fourth day of treatment of the male rats, twenty five (25) female rats received in treatment under - cutaneous during three (3) days, of the œstradiol (Oromon *) to the dose of 600 µg /animals to make them receptive. 6 hours after the last administration (seven days for the male rats and three days for the female rats), the animals have been placed in the cages by couple. The sexual parameters follow: the number of go up sexual, the number of raising, the number of ejaculation and the time of latency have been observed according to the standards methods [6,1,5,4] during one hour.

Study of the aqueous extract at the rat pretreated to the haloperidol, the atropine and in the L-NAME: The male rats have been left in five (5) shares containing 5 rats each:

- Share 1, witness, the animals received by oral way the physiological solution of NaCl to 9%
- Share 2, the animals received per extracts bone it aqueous of *B.coriacea* to the dose of 100 mg/kg of bodily weight
- Share 3 and 4, the animals received the injection respectively intra peritoneal of haloperidol and LNAME to the dose of 10 mg/kg follow-up of the administration of 100 mg/kg of the aqueous extract of *B.coriacea*, a one (1) hour before the mating of the animals.
- Share 5, the animals received by way intramuscular 10 /kg mg of the atropine followed of the administration per bone of the aqueous extract of *B.coriacea*.

Statistics Analysis of the results: The results expressed in affected averages of the mistake standard are submitted to an analysis of variance to a factor followed of the t test of Student - Fischer. The observed difference is meaningful when the calculated t value is in absolute value, superior to the read t value in the table of t for d.d.l = n1+n2 - 2 and the risk of first species of 5%. n1et n2 is the number of values for every measure.

RESULTS AND DISCUSSION

The aqueous extract of the peels of trunk of B. *coriacea* to the doses of 2000 and 5000 mg /Kg P.O, don't modify the general behavior of the mice. To these doses, it doesn't also provoke the death of the animals. The mice at which the survey is made seems to tolerate the aqueous extract of the peels of trunk of *B. coriacea*. The letal dose 50 (DL50), some extract would be located distinctly over the 5000mg/kg; according to the harmonized global system (SGH), the peels of trunks of *B.coriacea*, Would be to class in the category of the plants without danger [14] . The figure 1, show the effect of the aqueous extract on the ponderal evolution of the mice. It is evident from the analysis of this figure that the aqueous extract of *B. coriacea* (2000 and 5000 mg/kg p.o) provokes a significantly increase (P <0,005) of the weight of mouse of 150, 19± 13, 44% and 155, 79± 21, 08% in relation to the first day. Otherwise, this figure also shows that the gain ponderal of the animals dealt with the aqueous extract is superior to the one of the animals having received the distilled water (0, 5 ml/100 g p.o), the gain ponderal being more important to 5000 mg/Kg.

The survey of the acute toxicity has permited the choice of the doses 100, 250 and 500 mg/kg for the sexual parameter survey.

The aqueous extract of the peels of *B. coriacea* provokes a significantly increase of the number sexual mounts (figure 2a). The number of sexual, mounts passed respectively to 50 ± 7,03 (P <0,05) ;47,8 ± 2,2 (P <0,05) and 67,2 ±3,9 (P <0,001) to the doses of 100, 250 and 500mg/kg against 39,4 ± 7,4 sexual mounts at among the rat witnesses is of the respective increases of 26,90%, 21,32%,; and 70,55%. The rats treated to the yohimbine (1mg/kg p.o) presented 60,2± 12,39 sexual mounts (P <0,05); either an increase of 59,2% in relation to the rats witnesses. The aqueous extract of *B. coriacea* would reinforce the sexual attachment between the male and the female [9; 24]. For the humans, the sexual behavior doesn't limit not only to the erotic behavior, but also in search of the physical proximity, one thinks for it, that the extract aqueous to the doses of 100, 250 and 500 mg/kg, would act on the affection between sexual partners.

Concerning the number of erections, the aqueous extract of the peels of *B. coriacea* managed at the male rat to the doses used provokes as the yohimbine (1mg/kg) an increase of the erection number in relation to the rats witnesses (figure 2b). The erection number passed respectively to 58,2 ± 1,7 (P <0,05); 59,8± 1,4 (P <0,01); 66,8 ± 5,3 (P <0,05) with the doses of 100, 250 and 500 kg/ mg and 61,8 ± 3,35 (P <0,05) for the yohimbine, against 44 ± 5,8 erections at the witness are of respective increases of 32,27%; 35,9%; 51,81% and 40, 45%. This result suggests that the aqueous extract of *B. coriacea*, would act on the laxity of the muscles smooth péniens. Some aphrodisiac plants as *Nauclea latifolia*,[16] possess the properties of the muscle release [12]. The aqueous extract of *B. coriacea* by this capacity to loosen the smooth muscular cells, would be able to favored the blood flux toward the cavernous bodies of the penis. It could mislead the sexual pleasure thus. A similar effect has been recovered with the roots of *Rauvolfia obscura* [15].

Either of the reductions in percentage of 46,42% 55,39%; 79,88% and 65,88%. The reduction in the days of observed latency, suggest a stimulation of virility, characteristic of the aphrodisiacs. Also, it translates the nervous tonus[13;15].

This survey was also interested in the pharmacological ways borrowed by the aqueous extract of *B. coriacea*. For it, the extract has been used in presence of some substances as the L-nitro arginine methyl esther (LNAME), the Haloperidol and the atropine.

The administration of 100 mg/kg of the aqueous extract of the peels of *B. coriacea* at the rat previously treated in the LNAME, show a sexual act exhibition as at the rat treated to the only extract (figures 3a, 3b,; 3c and 3d). But with percentages of inhibition would caused to the LNAME of 25,62%, 19,59%, 42,85% and 5,42% respectively for the number disassembled sexual, the erection number , the ejaculations number and the time of latency in relation to the only extract (100 mg/kg). The maintenance of the sexual activity in spite of the antagonist's presence supposes that the aqueous extract of *B. coriacea* and the antagonist don't have the same sites of fixing. The aqueous extract of *B. coriacea* would not act on the nitronergic way.

However, at the rat treated to the haloperidol (10 mg/Kg) and atropine (10 mg/kg) has sexual act abolition total. The percentage of inhibition caused to these two antagonists on the studied sexual parameters is therefore of 100%. The total sexual act suppression at the rat treated to the haloperidol and the atropine that are respectively antagonistic dopaminergic and muscarinic suggests that the aqueous extract of *B. coriacea*, would have the same sites of fixing that the dopamine and the acetylcholine. Thus, it let think that the major ways of the aqueous extract of the peels of *B.coriacea* would be the ways dopaminergic and muscarinic. This observation is in agreement with the works of

Watcho [22]. that used the aqueous extract and ethanolic of *Dracaena arborea* and *Bridelia ferruginea*. The aqueous extract of the peels of *B.coriacea* would have aphrodisiac effects what would justify its use in traditional medicine for the treatment of the sexual impotence therefore.

CONCLUSION

The aphrodisiac survey of the aqueous extract of the peels of trunk of *B. coriacea*, show that the doses of 2000et 5000 mg/kg this plant doesn't modify the general behavior of the animals and provoke no mortality at the mouse. To the doses of the 100, 250 and 500mg/kg, the aqueous extract of the peels of *B. coriacea* stimulates the sexual activity favorably to the male rat. In the same way, this survey proved that the extract of the plant acts by the ways muscarinic and dopaminergic. Other complementary studies on the extracts of the plant remain even foreseeable.

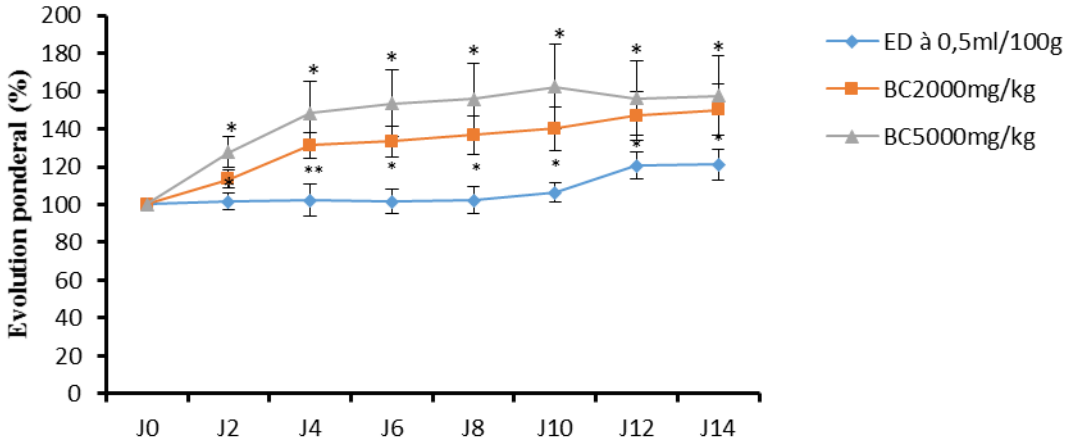

Figure 1 : Effect of the aqueous extract of *B.coriacea* on the evolution ponderal at the mouse
The values are means ± ESM n=3, *p <0,05; * *P <0,01 significanly Difference in relation to the first day.
ED= Water distilled, B.C= *Buchholzia coriacea*

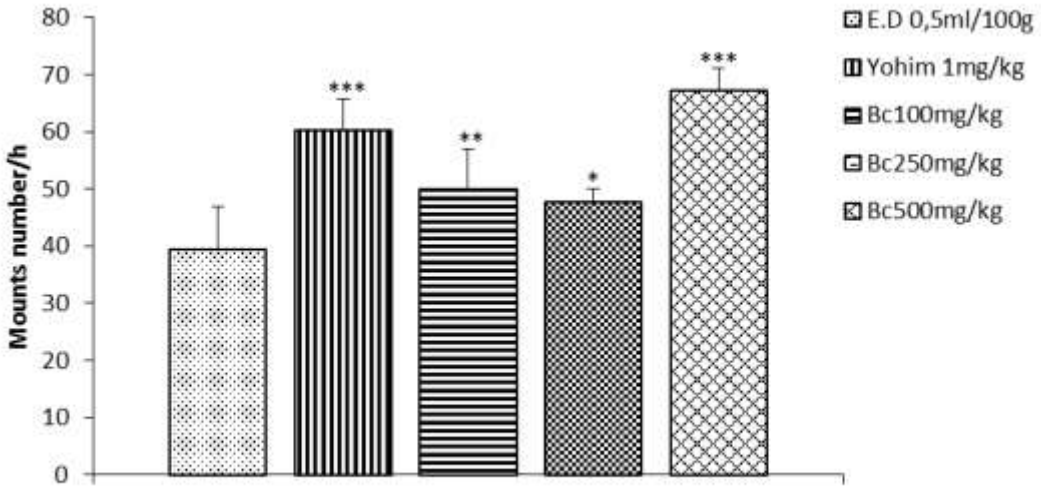

Figure 2a: Effects of the aqueous extract of the peels of *B. coriacea* on sexual mounts at the male rat
The result are means ± ESMS; n = 5; * p <0,05 and *** p <0,001 significanly difference in relation to the rat witness
ED: water distilled; yohim: yohimbine; Bc: Buchholzia coriacea. h :heure

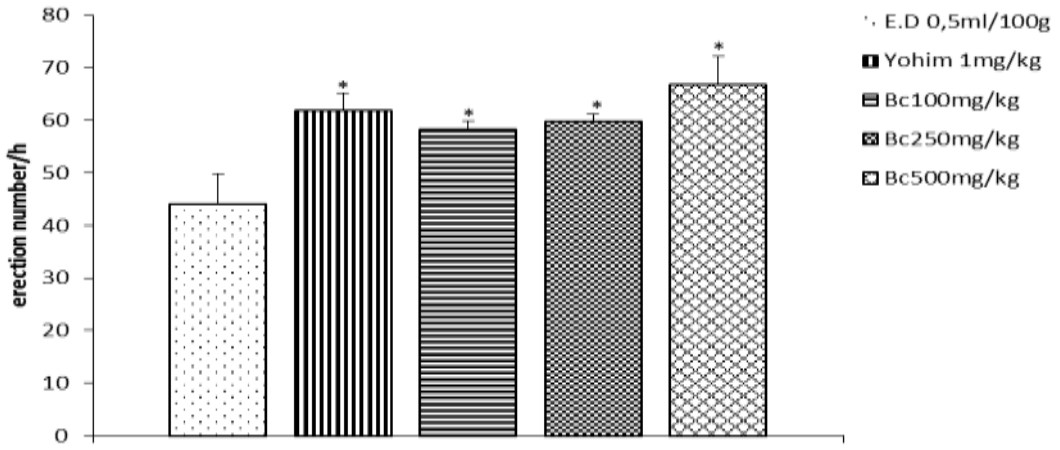

Figure 2b: Effects of the aqueous extract of the peels of B. coriacea on the number of raisings at the male rat. The results are means ± ESMS; n = 5; * p <0,05 and significantly difference in relation to the rat witness. ED: water distilled; yohim: yohimbine; Bc: *Buchholzia coriacea*.

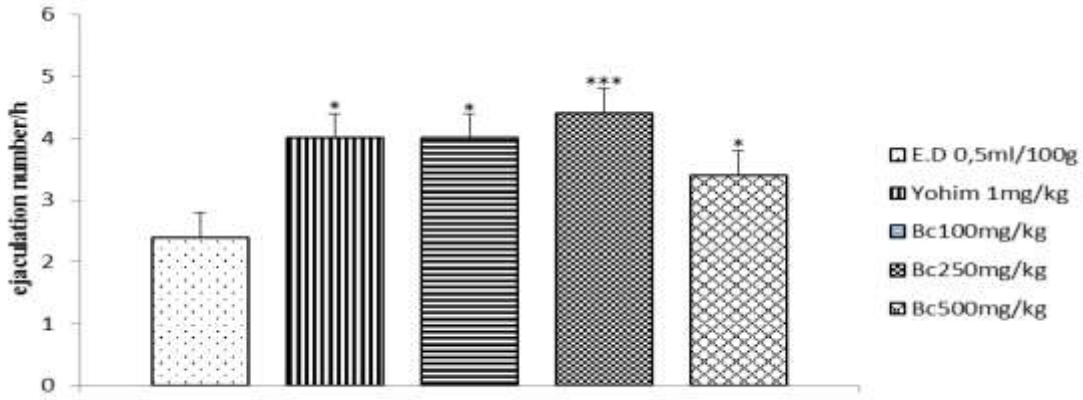

Figure 2c: Effects of the aqueous extract of the peels of B. coriacea on the number of ejaculations at the male rat. The results are middle ± ESMS; n = 5; * p <0,05; * * * p <0,001 significanly difference and ns: non meaningful in relation to the rat witness. ED: water distilled; yohim: yohimbine; Bc: *Buchholzia coriacea*.

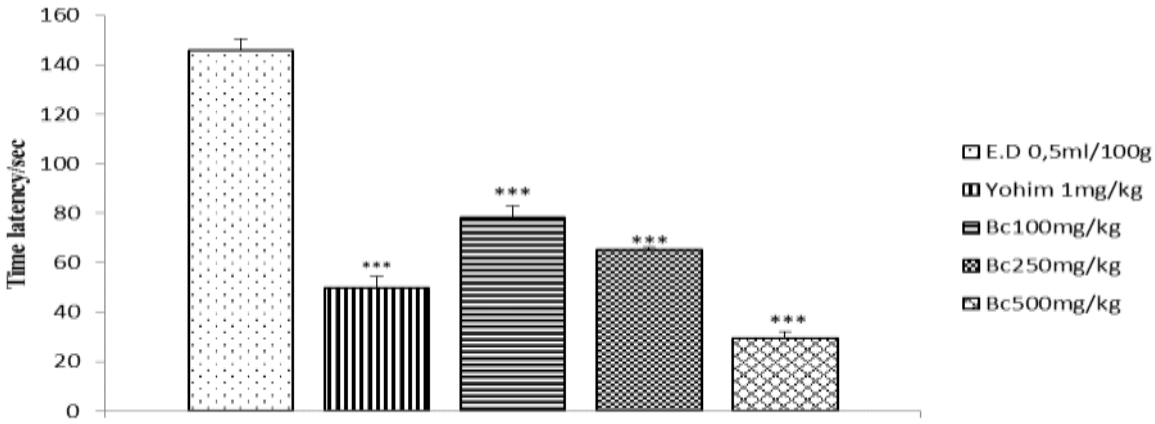

Figure 2d: Effects of the aqueous extract of the peels of *B. coriacea* on the time of latency at the male rat The results are middle ± ESMS; n = 5; * * * p <0,001 significanly difference in relation to the rat witness ED: water distilled; yohim: yohimbine; Bc: *Buchholzia coriacea.*

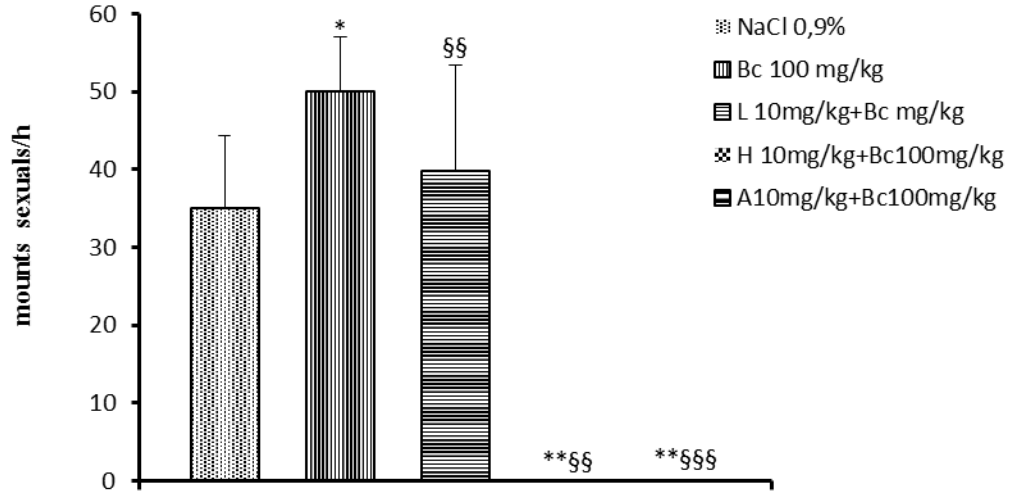

Figure 3a: Effect of the aqueous extract of the peels of *B.coriacea* on the number of mounts at the male rat pretreated in the LNAME, to the haloperidol and the atropine, Bc: *Buchholzia coriacea*.H: haloperidol; To: atropine and L: L-NAME

The results are middle ± ESMS; n = 5; * p <0,05; * * *P <0,01 significanly difference in relation to the witness. §§§ P <0,001 significantly difference in relation to the rat treated in the B.c 100 mg/kg only. ns = non significantly difference in relation to the extract of Bc 100mg/kg

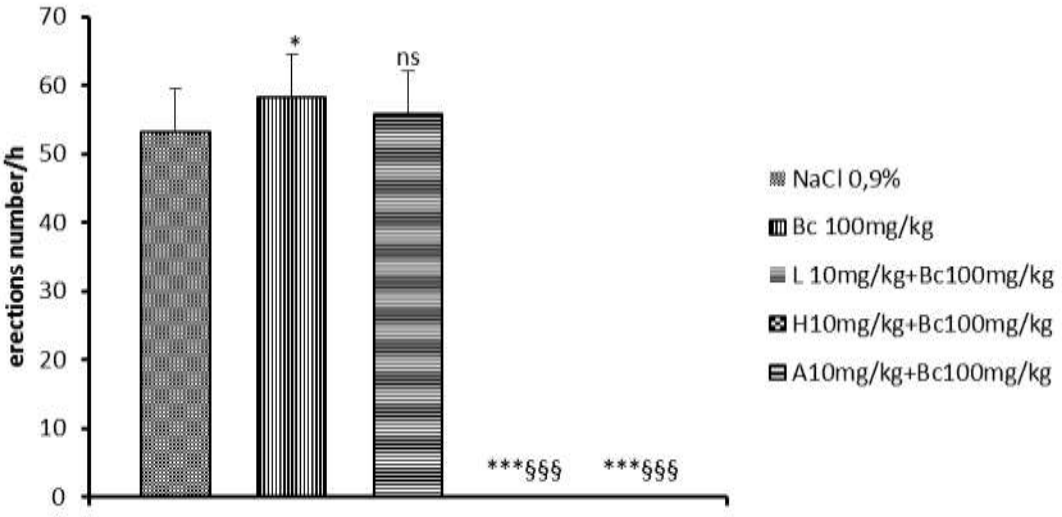

Figure 3b: Effect of the aqueous excerpt of the peels of B.coriacea on the number of erection at the male rat pretreated in the LNAME, to the haloperidol and the atropine, Bc: *Buchholzia coriacea*.H: haloperidol; atropine and L: L-NAME

The results are means ± ESMS; n = 5; * p <0,05; * * *P <0,01 significanly difference in relation to the witness. §§§ P <0,001 significanlyl difference in relation to the rat treated in the B.c 100 mg/kg only. ns = non significantly difference in relation to the extract of Bc 100mg/kg

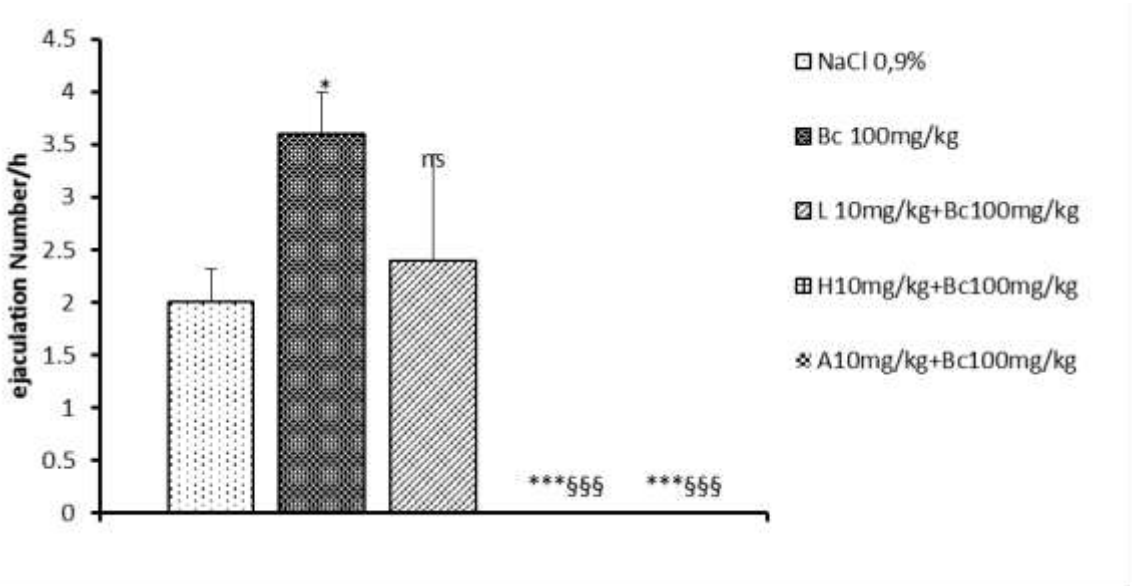

Figure 3c: Effect of the aqueous extract of the peels of B.coriacea on the number of ejaculation at the male rat pretreated in the LNAME, to the halopéridol and the atropine, Bc: Buchholzia coriacea.H: haloperidol; atropine and L: L-NAME

The results are mean ± ESMS; n = 5; * p <0,05; * *P <0,01 significantly difference in relation to the witness. §§§ P <0,001 significantly difference in relation to the rat treated in the B.c 100 mg/kg only. ns = non significantly difference in relation to the extract of Bc 100mg/kg

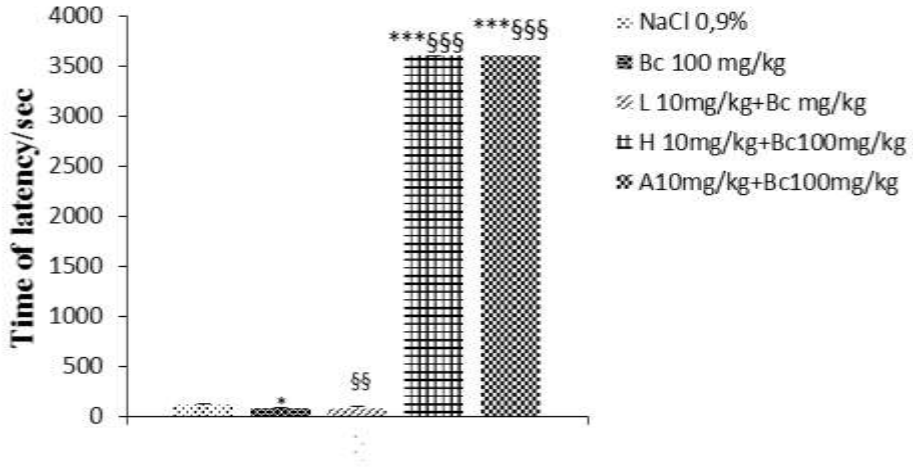

Figure 3d: Effect of the aqueous extract of the peels of B .coriacea on the time of latency at the male rat pretreated in the LNAME, to the halopéridol and the atropine, Bc: Buchholzia coriacea.H: haloperidol; atropine and L: L-NAME

The results are mean ± ESMS; n = 5; * p <0,05; * *P <0,01 significantly difference in relation to the witness. §§§ P <0,001 significantly difference in relation to the rat treated in the B.c 100 mg/kg only. ns = non significantly difference in relation to the extract of Bc 100mg/kg

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