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Analgesic potentials of aqueous leaf extracts of *Jatropha Tanjorensis* and *Cnidoscolus aconitifolius* on *Wistar* rats

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Abstract
This study investigated the analgesic potentials of aqueous leaf extracts of *Jatropha tanjorensis* (JT) and *Cnidoscolus aconitifolius* (CA) on *Wistar* rats. Hot plate and writing methods were used to ascertain pain. Hot plates test consist of 8 groups; control, 200mg/kg celecoxib, 50mg/kg Diclofenac, 500mg/kg JT, 500mg/kg CA, 1000mg/kg JT, 1000mg/kg CA and a combination of 500mg/kg each of JT and CA labeled Groups 1-8 respectively. Acetic acid test consist of 6 groups; control, 200mg/kg Celecoxib, 50mg/kg Dichlofenac, 500mg/kg JT, 500mg/kg CA, a combination of 500mg/kg each of CA and JT as Groups 1-6 respectively. Phytochemical screening of CA revealed the presence of alkaloids (4.57%), tannin (0.38%), saponins (3.93%), flavonoids (2.38%), cyanogenic glycoside(0.71%), terpenoid (4.80%), resin(4.75%) and JT revealed the presence of alkaloids(3.59%), tannin (0.65%), saponins (2.73%), flavonoids (3.6%), cyanogenic glycoside (1.16%), terpenoid (3.50%), Resin (3.45%). Result of analgesic potentials showed that JT at 500 and 1000mg/kg significantly ($p<0.05$) increased the reaction time to pain. Similarly, CA at 500 and 1000mg/kg cause a significant delay in reaction time. Synergic effect of CA and JT at 1000mg/kg was significantly higher than other doses in eliciting analgesic effect when compared to groups treated with diclofenac (50mg/kg) and celecoxib (200mg/kg). In writing method assessed by acetic acid induced pain, the extracts significantly showed the amber of abdominal writhes as dose dependent. Abdominal constriction of 78.13% was observed in the group treated with a combination of 500mg/kg each of CA and JT. This showed a significant increase ($p<0.05$) when compared with the group treated with celecoxib and dichlofenac. In conclusion, aqueous leaves extracts of CA and JT have analgesic potentials in acetic acid and hot plate induced pain in *Wistar* rats.

Keywords: potentials, *Jatropha Tanjorensis*, *Cnidoscolus aconitifolius*

1. Introduction
Plants that are medicinal are vital sources for new pharmacologically useful substances. Drugs that are purely produced from medicinal plants have been reported to be highly rated for their low toxicity and therapeutic action against synthetic once (Ridtitid *et al*., 2008) [19]. Ridtitid *et al*. (2008) [19] found that in some countries, the locals are almost entirely dependent on herbs or traditional concoction for their different ailments. According to Chan *et al*., 2012; Yuan *et al*., 2016) [6, 10] the medicinal claims of several plants have been subjected to a lot of scientific investigations, which have resulted in production of some pharmacologically useful compounds. In clinical practice, herbal medicines have been reported to complement orthodox medicine in managing diseases such as cardiac and neurological disorders (Yuan *et al*., 2016) [10]. In Africa, the forest vegetation according to Ojewole (2005) makes it possible for locals to choose from a pool of plants to cure various ailments afflicting humans and animals. This notwithstanding, Ojewole (2005) submitted that the medicinal potential of African flora is yet to be fully explored.
Due to the frequent occurrence of pain, it is fast becoming a public health issue with considerable socio-economic effects. Pain have been reported to be an indication of several illnesses and it is predicted that about 80-100% of the population in the developing countries of the world experience pain on a daily bases or once in a life time (Abdur-Rauf *et al*., 2017) [1]. Pain treatment as opined by Abdur-Rauf *et al*. (2017) [1] requires analgesics including, anti- inflammatory drugs, which at highest concentration exhibits analgesic properties. In this respect, it found that "inhibition of nitric oxide (NO) a prostaglandin E2 production could be a potential therapy for different inflammatory disorders". Although, so many anti-inflammatory and analgesics drugs are available, current drug therapy is related to certain observed adverse effects such as bronchospasm, fluid retention, gastrointestinal irritation and extension of bleeding time. Therefore, it is important to discover new drugs with fewer adverse effects. Interestingly, there are ongoing researches in medicinal plants aimed at finding new drugs (Abdur-Rauf *et al*., 2017) [1].
The hot plate test as reported by Lebars *et al*., (2001) [14] "is one of the oldest and most widely used experimental methods to assess nociception in rats and mice". The test procedure involves placing a rodent on an enclosed hot plate and then measuring the latency to lick a hind paw or jump out of the enclosure (Lebars *et al*., 2001) [14]. The merit of this kind of

Test is that the result is quantifiable, objective, and can be administered repeated without causing any inflammation to the rodents, and it can be used to the supra-spinally-organized responses to a noxious stimulus (Bannon and Malmberg, 2007) [5]. The acetic acid writhes test among many others are some of the experimental tests that will be employed in the course of this study to measure and evaluate the effects of the selected plants on pain.

2. Materials and Methods

2.1 Sample Collection and Preparation

Jatropha tanjorensis leaves were harvested from a farmland in Aluu in Ikwerre Local Government Area of Rivers State. Cnidoscolus aconitifolius leave was also collected from a farm in Elelewo in Obio-Akpor Local Government Area of Rivers State. Both plants were taken for identification in herbarium.

2.2 Sources of Experimental Animals

Fifty Sixty(56) Wistar rats weighing between 114g – 167g were obtained from the animal house of the Department of Physiology, University of Port Harcourt, Nigeria. The rats were kept in well-ventilated cage under constant environmental and adequate nutritional conditions for acclimatization before the work started.

2.3 Extract Preparation

The samples were free from organic matter using clean water and dried in sun for a period of two (2) week on clean wooden boards. The dried sample was sliced with a sterilized knife and ground using a warring laboratory blender until a fine, smooth powder was obtained 300g of the leaves of JP and CN were weighed respectively and transferred into different comical flasks of 2000ml of dissolved water (several) was added vigorously shaken for 5-10 minutes after 72 hours at 37oC before filtering with a Muslin cloth. The filtrates were collected as extract and used for the experiment. At the end of the extraction varied doses of the extracts were calculated and stored for usage. The leaflets of the standard drugs were studied and concentrations of the active ingredient per tablet of each standard drugs were used to estimate the equivalent dose ratio to be administered to the rats that will equate exactly 200mg/kg and 50mg/kg for Celecoxib and Diclofenac respectively.

2.4 Method of Phytochemcial of Screening

The leaf extract of Cnidoscolus aconitifolius and Jatropha tanjorensis were screened for flavonoids, tannis, saponions, alkaloids, terpenoids, steroids, glycosides and anthraquinones, using the method described by Sofowara (1993) [22] and Trease and Evans (2002) [23].

2.5 Experimental Design

The paws of the rats are said to quickly respond to heat at temperature which are not damaging the skin. The response according to Deuis, *et al*., (2017) [7] is like jumping and withdrawal of the paw by licking the paws. The animals were placed in hot plate kept at a temperature by 55oC. The rats for this test were divided into eight (8) groups of four rats each. All the rats made were to pass through the hot plate test. Group 1 (control) rats were given only distilled water. Group 2 was given 200mg/kg Celecoxib while group three was administered with 50mg/kg Dichlo fenac. Groups 4 and 6 received 500mg/kg and 1000mg/kg aqueous extracts of Jatropha tanjorensis respectively, while group 5 and 7 took 500mg/kg and 1000mg/kg of Cnidoscolus aconitifolious respectively. Group 8 rats were given a mixture of both extracts (Jatropha tanjorensis and Cnidoscolus aconitifolious) at dose of 500mg/kg.

2.6 Determination of Analysis Potential of Aqueous extracts of Cnidoscolus aconitifolious and Jatropha tanjorensis using hot plate method

The test was done in 30 minutes intervals. The first reading was taken 30 minutes after giving the various doses assigned for each group and a repeat was carried out 60, 90 and 120 minutes thereafter. A break of 60 seconds was observed to avoid damage of the paw. Reaction time and type of response was noted using stop watch.

2.7 Determination of Analysis Potential of Aqueous extracts of Cnidoscolus aconitifolious and Jatropha tanjorensis using acetic acid induced writhing on Wistar rats

The constrictions of the abdominal which is as a result of intraperitoneal injection of 0.6% acetic acid was done according to Ezeja *et al*., (2011) [8] method. This method has to do with watching how the abdominal muscle contract together with the stretching of hind limbs. The Wistar rats were divided into sixteen (6) groups (four rats each). The first group serves as control and was given distilled water to act as negative control. Group 2 was given 200mg/kg Celecoxib while Group 3 was administered with 50mg/kg dichlofenac. Groups 4 was took 500mg/kg aqueous extracts of Jatropha tanjorensis, while Group five was given 500mg/kg of Cnidoscolus aconitifolious respectively. Group 6 received a mixture of Jatropha tanjorensis and Cnidoscolus aconitifolious extracts at dose of same 500mg/kg. Exactly 30 minutes after the administration of the extracts, each rat was injected intraperitoneal with 0.06% acetic acid and abdominal constriction for each rat was recorded five minutes after the injection of acetic acid for a period of 10 minutes. Calculation of Percentage inhibition was thereafter done using formula shown below:

Inhibition% = mean no of writer (control) – writhes mean (Test) X 100 / mean number of writhes (control).

2.8 Methods of Data Analysis

Results were statistically analyze using statistical package for social sciences (SPSS) version 23. Group means from the experiment were compared using one-way ANOVA (analysis of variance) followed by Duncan's test as a single post-hoc test for multiple comparison. All results were tabulated as Mean ± S.E.M. (Standard error of the means). $p \leq 0.05$ is taken as statistically significant.

3. Results

3.1 Qualitative Phytochemical Compositions of leaves of Cnidoscolus Aconitifolious and Jatropha Tanjorensis

Screening for phytochemicals (qualitatively) present in leaves extract of Cnidoscolus aconitifolius and Jatropha tanjorensis revealed terpenoid, phenol, steroid, oxalate, resin, alkaloid, tannin, cyanogenic glycoside, flavonoid and saponin (Table 1) were present in both Cnidoscolus aconitifolius and Jatropha tanjorensis in varying degree.

3.2 Quantitative Phytochemical Composition

In further screening of these plants (quantitative screening) the phytochemicals identified are in Cnidoscolus aconitifolius includes saponin with 3.89 ± 0.54 and has the highest composition with 4.57 ± 0.17 in the leaf. Also, in the Jatropha tanjorensis, saponin was found to be 2.73 ± 0.22 ranked highest is Flavonoids with 3.61 ± 0.12 (Table 2). The quantitative phytochemistry of alkaloids of Cnidoscolus aconitifolius and Jatropha tanjorensis showed that alkaloid is more in Cnidoscolus aconitifolius than Jatropha tanjorensis. The flavonoid content was least in Cnidoscolus aconitifolius than what is obtained in Jatropha tanjorensis. While Jatropha tanjorensis has the highest value of Steroids and Cyanogenic glycoside, Cnidoscolus aconitifolius have moderate values of steroid and Cyanogenic glycosides. Jatropha tanjorensis has the most of Tannin with moderate values of 0.65±0.10. Cnidoscolus aconitifolius is least in Tannin with values of 0.38±0.156.

3.3 The Analgesic effect of the leaves extract of Cnidoscolus Aconitifolius and Jatropha tanjorensis on heat induced pain in Wistar rats using hot-plate method

The heat analgesia hot plate assay is a pharmacological test for evaluating the analgesic potential of test compounds. The results in Table 3 showed that the treatment of rats with Celecoxib (200mg/kg) increase the hot plate latency reaction 20.00±2.51, 20.67±0.89 from 90 to 120 minutes after treatment as against the control group 3.33±0.89, 3.00±0.00 from 90 t0 120 minutes after treatment with distilled water. Diclofenac (50 mg/kg) shows 19.67±0.67, 14.33±0.88 latency from 90 to 120 minutes after treatment. On the other hand, Jathropha tanjorensis (500mg/kg and 1000mg/kg) significantly influence the reaction time of the animals to the hot plate at doses of 500 mg/kg in 19.00±0.57, 15.67±2.33 and 16.00±0.57, 13.33±2.33 from 90 to 120 minutes ($p< 0.05$) respectively. Indicating a drop in latency with time as the concentration of extract is doubled. Though, results showed increase in latency with increase in concentration from 30 to 60 as showed in table below. Cnidoscolus aconitifolius (500mg/kg and 1000mg/kg) cause a significant delay in reaction to the applied heat (stimulus). The reaction time against the applied heat (stimulus) was significantly ($p< 0.05$) increase after 30 minutes of administration of Cnidoscolus aconitifoliusat 500 and 1000 mg/kg which was maintained up to 24.00±2.00, 27.00±1.52 and 24.00±2.52, 28.67±0.88 respectively for 90 minutes and 120minutes when compared to control. In considering synergetic effect of Jathropha tanjorensis and Cnidoscolus aconitifolius, the study findings shows that at 1500mg/kg was superior in pain relieving effect compared with other groups. Combination of Jathropha tanjorensis and Cnidoscolus aconitifolius revealed a significant ($p<0.05$) increase in pain latency was observed after 120 minutes of dosing (Table 3).

Table 1: Qualitative Phytochemical found in Cnidoscolus aconitifolius and Jatropha tanjorensis leaves

Plant	Terpenoid	Phenol	Steroid	Oxalate	Resin	Alkaloid	Tannin	Cyanogenic Glycoside	Flavonoid	Saponin
Cnidoscolus aconitifolius	+++	+	+	+	+++	+++	++	++	++	+++
Jatropha tanjorensis	++	++	+	-	++	++	+++	+++	++	++

Table 2: Quantitative Phytochemical composition of Cnidoscolus aconitifolius and Jatropha tanjorensis

Plant	Alkaloid (%)	Tannin (%)	Cyanogenic glycoside (%)	Flavonoid (%)	Saponin (%)	Steroids (%)
Cnidoscolus aconitifolius	4.57±0.16	0.38±0.156	0.71±0.04	2.38±0.13	3.93±0.04	0.27±0.00
Jatropha tanjorensis	3.59±0.30	0.65±0.10	1.16±0.13	3.61±0.13	2.73±0.03	0.51±0.03

Table 3: Analgesic effect of aqueous leaf extracts of Cnidoscolus Aconitifolius and Jatropha tanjorensis on heat induced pain in Wistar rats.

	hot30min	hot60min	hot90min	hot120min
Water	3.33±0..33	3.33±0.33^{bcdefgh}	3.33±0.89^{bcdefgh}	3.00±0.00^{bcdefgh}
Celecoxib 200mg/kg	3.67±0.33	7.67±0.33^{aegh}	20.00±2.51^{ah}	20.67±0.89^{acdefgh}
Diclofenac 50mg	4.00±0.57	6.67±0.67^{aefgh}	19.67±0.67^{aefgh}	14.33±0.88^{abegh}
*Jathropha tanjorensis*500mg/kg	4.00±0.57	6.67±0.33 ^{aefgh}	19.00±0.57 ^{aefgh}	15.67±2.33^{abegh}
*Cnidoscolus aconitifolius*500mg/kg	4.67±0.33^{ab}	9.67±0.67^{abcdgh}	24.00±2.00^{acdfh}	27.00±1.52^{abcdfh}
*Jathropha tanjorensis*1000mg/kg	3.67±0.67	8.67±0.89^{acdgh}	16.00±0.57^{abcdegh}	13.33±2.33^{abegh}
*Cnidoscolus aconitifolius*1000mg/kg	4.67±0.33^{ab}	13.00±1.00^{abcdef}	24.00±2.52 ^{acdfh}	28.67±0.88^{abcdfh}
Jathropha tanjorensis 500mg/kg + *Cnidoscolus aconitifolius* 500mg/kg	4.00±0.00^{abeg}	12.67±0.67 ^{abcdef}	29.33±0.89^{abcdefg}	33.33±2.40^{abcdefg}

Data are reported as mean ± S.E.M. each group from 1-8 are denoted with alphabet a-h. Values with similar superscript alphabet represent significant different at $p \leq 0.05$ significant. Values are represented with superscript alphabets a-h.

3.4 Analgesic effect of aqueous leaf extracts of Cnidoscolus Aconitifolius and Jatropha tanjorensis on accetic acid induced pain in Wistar rats

Results obtained on Analgesic effect of aqueous leaf extracts of Cnidoscolus Aconitifolius and Jatropha tanjorensis on accetic acid induced pain in Wistar rats showed that

Cnidoscolus Aconitifolius and Jatropha tanjorensis leaves extract slowed the number of acetic acid induced abdominal writhes in rats in a dose dependent manner (Table 4). The highest percentage inhibition of abdominal constriction (78.13%) was observed in the group with the combination of both Cnidoscolus Aconitifolius and Jatropha tanjorensis at 500 mg/kg ($p<0.05$) and better than Diclofenac (59.37%) at 50 mg/kg ($p<0.05$), the standard drug used. The extract of Jatropha tanjorensis leaves at 500 mg/kg, had the lowest writhe of (19.79%) even lower than Celecoxib 200mg/kg (38.18%). The extract of Cnidoscolus aconitifolius 500mg/kg, significantly ($p<0.05$) slowed writhe with inhibition of 64.58% which is slightly above that of Dclofenac at 50mg/kg body weight.

Table 4: Effect of aqueous leaf extracts of Cnidoscolus Aconitifolius and Jatropha tanjorensis on Acetic acid-induced pain in Wistar rats.

Administration	No. of writhes (5 min)	Percentage inhibition (%)	No. of writhes (10 min)	Percentage inhibition (%)	Commutative writhes count	Percentage inhibition (%)
Water	10.25±1.11^{bcdef}	0.00	13.75±0.62^{bcef}	0.00	24.00±1.68^{bcdef}	0.00
Celecoxib 200mg/kg	6.25±0.48^{acdef}	39.02	8.50±0.64^{acdef}	38.18	14.75±1.03^{acdef}	38.54
Diclofenac 50mg	4.50±0.29^{abdf}	56.09	5.25±0.25^{abdf}	61.82	9.75±0.47^{abdf}	59.37
*Jathropha tanjorensis*500mg/kg	7.75±0.25^{abcef}	24.63	11.50±0.64^{bcef}	16.36	19.25±0.75^{abcef}	19.79
*Cnidoscolus aconitifolius*500mg/kg	4.00±0.40^{abdf}	60.97	4.50±0.28^{abdf}	67.27	8.50±0.29^{abdf}	64.58
Cnidoscolus aconitifolius + jathropha tanjorensis 500mg/kg	2.25±0.25^{abcde}	78.05	3.00±0.41^{abcde}	78.18	5.25±0.62^{abcde}	78.13

Data are reported as mean ± S.E.M. each group from 1-6 are denoted with superscript alphabet a-h. Values with similar superscript alphabet represent significant different at $p < 0.05$ level.

4. Discussion

Herbal drugs such as made from plants can give complementary or synergy effect. The leave extract of Cnidoscolus Aconitifolius and Jatropha tanjorensis is not an exception. The results revealed the present of alkaloids, flavonoids, tannin, cynogenic glycosides, steroids and saponins in Cnidoscolus Aconitifolius and Jatropha tanjorensis leave extract as shown in Table 4.1a and 4.1b. According to Ojewole (2011), the pharmacological relevance of medicinal plants is due to their phytochemical composition. As such the active ingredients present in the plants under study is highly implicated in its analgesic or pharmacological property. For instance there have been reports of the analgesic properties of alkaloids (Fagner *et al*., 2014; Muhammad *et al*., 2014; Mohammad *et al*., 2016) [9, 17, 16]. For others like species of malvaceae, papilionaceae and phyllanthaceae, the whole plant is use (Omondi and Omondi 2015) [20]. The phytochemical composition for most of these plants were reported to have been alkaloids, flavonoids, steroids, phenolic compounds, glycosides, tannins, saponins, triterpenoids, and stilbenes. The phytochemistry of previous plants used for analgesic tests are similar to what is obtainable in the two research plants.

Various solvent extract from different plant part have demonstrated analgesic ability. Bulbils of Dioscorea bulbifera possess both analgesic and anti-inflammatory activities in mice and rat (Mbiantacha *et al*., 2011). A study carried out by Okokon *et al*., (2012; 2013; 2016) [11] found that in all three models study (formalin induced paw licking, acetic acid induced writhing and thermally induced pain) of analgesic testing in mice, the extract of the plant used in that study showed a significant analgesic activity. Although, the scope of this present study does not cover the formalin induced paw licking used by Okokon *et al*., (2016) [11], there were similarity in terms of the ability of the leaves of Cnidoscolus Aconitifolius and Jatropha tanjorensi extract to significant exhibit analgesic activity. Adedapo *et al*., (2008) [2] stated that the aqueous extract of Cussonia paniculata at concentrations of 50, 100 and 200mg/kg body weight caused a decrease in licking time and licking frequency in rats injected with 25% formalin in a dose dependent manner, signifying that the plant has analgesic property. The present research adopted similar dose dependent analgesic properties even though; the induction was made using 0.6% acetic acid.

In this study, both Cnidoscolus Aconitifolius and Jatropha tanjorensi significantly slows the number of acetic acid induced abdominal writhes in rats, dose dependently. The highest percentage inhibition of abdominal constriction (78.13%) was observed in the group with the combination of both Cnidoscolus aconitifolius and Jatropha tanjorensis at 500 mg/kg ($p<0.05$) and was greater than that of Diclofenac (59.37%) at 50 mg/kg ($p<0.05$). The extract of Jatropha tanjorensis at 500 mg/kg, had the lowest writhe of (19.79%) even lower than Celecoxib 200mg/kg (38.18%). The leaves extract of Cnidoscolus aconitifolius 500mg/kg, significantly (<0.05) slows writhe with inhibition of 64.58% which is slightly greater than that of Diclofenac at 50mg/kg. Acetic acid solution was administered in rats and the abdominal constrictions (writhes) were observed after 5minutes. The writhes were counted for two phases, each of 10 min, respectively. Diclofenac 50mg/kg used as standard drug in first phase it reduces pain 56%, second phase; 61.82%, with commutative inhibition of 59.37%. See acetic acid induced writhes inhibition results of all the tested drugs in Table 4.3. Cnidoscolus Aconitifolius and Jatropha tanjorensi leaves extracts in the writhing test showed noticeably inhibit acetic acid induced pain compared with control group (group 1 administered distilled water orally). Pain caused by heat coming from hot-plate according to Aubrun *et al*., (2003) [4] is specific. The ability of the Jathropha tanjorensis and Cnidoscolus aconitifolius leaves extract to prolong the reaction latency in hot- plate method further indicates the analgesic activity of these plants.

This study also considered the synergesic effect of Jathropha tanjorensis and Cnidoscolus aconitifolius at 5000mg/kg each. It gave a better result compared with doses. Combination of Jathropha tanjorensis and Cnidoscolus aconitifolius markedly increased pain latency ($p<0.05$) at each time point after dosing

And maximum effect was noted after 120 minutes of dosing (Table 4).

The study was to establish the scientific basis to support local uses of Cnidoscolus aconitifolius and Jatropha tanjorensis against pain. By implication of the result of this study it can be inferred that the analgesic activity of these plants is most likely to be mediated peripherally and centrally which agrees with Okokon *et al*., (2012) [11].

Analgesics as stated by Shreedhara (2009) [21] are capable of affecting the PNS or CNS to relieve pain without significantly affecting consciousness of the user. Centrally acting analgesics act by raising the threshold for pain and also altering the physiological response to pain. On the other hand, peripherally acting analgesics act by impulses blockage at chemoreceptor site of pain Shreedhara (2009) [21]. The animal models employed for assessment of pain in this study is pain-state models using thermal stimuli which include hot-plate method which aided in illustrating centrally mediated antinociceptive responses focus generally on changes above the spinal cord level. Hot plate method involves higher brain functions and is regarded a supraspinally organized response.

5. Conclusions

This study aim was to evaluate the analgesic potentials of aqueous leaves extract of Jatropha tanjorensis and Cnidoscolus aconitifolius on Wistar rats. The phytochemical screening of Cnidoscolus aconitifolius showed alkaloids (4.57%), tannin (0.38%), saponins (3.93%), flavonoids (2.38%), cyanogenic glycoside(0.71%), terpenoid (4.80%), resin(4.75%) and JT revealed the presence of alkaloids(3.59%), tannin (0.65%), saponins (2.73%), flavonoids (3.6%), cyanogenic glycoside (1.16%), terpenoid (3.50%), Resin (3.45%). It was also found that CA (500mg/kg and 1000mg/kg cause significant prolongation in reaction time. In acetic acid writing test, extracts significantly shows the amber of abdominal writhes in rats, dose dependently. The highest percentage inhibition of abdominal constriction was 78.13% and it was observed in combined CA and JT group at 500mg/kg and was greater than the standard drug. The findings of this study showed that aqueous leaves extract of Cnidoscolus aconitifolius and Jatropha tanjorensis separately and synegesicaly has potential analgesic activity on Wistar rats.

References

1. Abdur-Rauf NJ, Zarka A, Mohammad SM. Analgesic Potential of Extracts and Derived Natural Products from Medicinal Plants, Pain Relief - From Analgesics to Alternative Therapies, Cecilia Maldonado. In tech Open, 2017, 34-76.
2. Adedapo AA, Sofidiya MO, Maphosa V, Moyo B, Masika PJ, Afolayan AJ, *et al*. Anti-inflammatory and analgesic activities of the aqueous extract of Cussonia paniculata stem Bark. Rec. Nat. Prod. 2008; 2(2):46-53.
3. Apurba Mukherjee, Meghali Chaliha, Swarnamoni Das. Study of analgesic activity of ethanol extract of Phlogacanthus thyrsiflorus on experimental animal models, Bangladesh J Pharmacol, 2009; 4:147-149.
4. Aubrun F, Paqueron X, Langeron O, Coriat P, Riou B. What pain scales do nurses use in the post anaesthesia care unit? Eur. J Anaesthesiol, 2003; 20:745-749.
5. Bannon AW, Malmberg AB. Models of nociception: hot-plate, tail-flick, and formalin tests in rodents. Curr. Prot. Neurosci, 2007; 8.9.1-8.9.15.
6. Chan K, Shaw D, Simmonds MS, Leon CJ, Xu Q, Lu A, *et al*. Good practice in reviewing and publishing studies on herbal medicine, with special emphasis on traditional Chinese medicine and Chinese materia medica. J Ethnopharmacol, 2012; 140:469-475.
7. Deuis JR, Dvorakova LS, Vetter I. Methods Used to Evaluate Pain Behaviours in Rodents. Front Mol Neurosci. 2017; 10(284):1-17.
8. Ezeja MI, Ezeigbo II, Madubuike KG. Analgesic activity of the methanolic seed extract of Buchholzia coriacea. RJPBCS. 2011: 2(1):187-193.
9. Fagner CL, Jaime RF, Hermann FC, Paula RRS, Andrea SC, Alan BC, *et al*. Curine, an alkaloid isolated from Chondrodendron platyphyllum inhibits prostaglandin E2 in experimental models of inflammation and pain. Planta Med, 2014; 80:1072-8.
10. Haidan Yuan, Qianqian Ma, Li Ye, Guangchun Piao. The Traditional Medicine and Modern Medicine from Natural Products. Molecules. 2016; 21(5):559.
11. Jude E Okokon, Anwanga E Udoh, Samuel G Frank, Louis U Amazu. Anti-inflammatory and analgesic activities of Melanthera scandens. Asian Pacific Journal of Tropical Biomedicine, 2012, 144-148.
12. Jude E. Okokon, Patience J. Okokon, Ahsana Dar Farooq, Mohammed Iqbal Choudhary. Anti-inflammatory and antinociceptive activities of Homalium letestui, Pharmaceutical Biology. 2013; 51(11):1459-1466.
13. Jude Fiom Okokon, Koofreh Davis, Lucky Legbosi Nwidu. Anti-inflammatory and antinociceptive activities of Solenostemon monostachyus aerial part extract in mice. AJP. 2016; 6(3):284-294.
14. Lebars D, Gozariu M, Cadden SW. Animal models of nociception. Pharm. Review, 2001; 53:597-652.
15. Mbiantcha M, Kamanyi A, Teponno RB, Tapondjou AL, Watcho P, Nguelefack TB, *et al*. Analgesic and Anti-Inflammatory Properties of Extracts from the Bulbils of Dioscorea bulbifera L. var sativa (Dioscoreaceae) in Mice and Rats. Evidence-Based Complementary and Alternative Medicine, 2011, 1-9.
16. Mohammad Shoaib, Syed Wadood Ali Shah, Niaz Ali, Ismail Shah, Shafi Ullah, Mehreen Ghias, *et al*. Scientific investigation of crude alkaloids from medicinal plants for the management of pain. BMC Complementary and Alternative Medicine. 2016; 16(178):1-8.
17. Muhammad N, Shrestha RL, Adhikari A, Wadood A, Khan H, Khan AZ, *et al*. First evidence of the analgesic activity of govaniadine, an alkaloid isolated from Corydalis govaniana Wall. Nat Prod Res, 2014; 29:430-7.
18. Oyewole OI, Akingbala PF. Phytochemical Analysis and Hypolipidemic Properties of Jatropha tanjorensis Leaf Extract. European Journal of Medicinal Plants. 2011; 1(4):180-185.

19. Ridtitid W, Chutha S, Wantana R, Wongnawaa M. Antinociceptive activity of the methanolic extract of Kaempferia galanga in experimental animals. Journal of Ethnopharmacology, 2008; 18:225-230.
20. Omondi Seline, Omondi JC. Phytochemical analysis of 50 selected plants found in the University Botanic Garden, Maseno, Kenya for their chemotaxonomic values. Journal of Medicinal Herbs and Ethnomedicine, 2015; 1:130-135.
21. Shreedhara CS, Vaidya VP, Vagdevi HM, Latha KP, Muralikrishna KS, Krupanidhi AM, *et al*. Screening of Bauhinia purpurea Linn. For analgesics and anti-inflammatory activities. Indian J Pharmacol, 2009; 41:75-79.
22. Sofowara A. Medicinal Plants and Traditional Medicine in Africa. Spectrum Book Limited. Ibadan Nigeria, 1993, 289.
23. Trease GE, Evans WC. Phytochemicals in Pharmacognosy. 15th ed.; Saunders Publishers, London, 2002, 42-44. 221- 229, 246- 249, 304-306,331-332, 391-393.