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Evaluation of Anti-Epileptic Activity of Ethanolic Extract of *Phoenix Dactylifera Lin.* And *Litchi Chinensis Sonn.*Using Experimental Animals.

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Abstract
Epilepsy is a gathering of neurological issues portrayed by epileptic seizures. Epileptic seizures are scenes that can fluctuate from brief and almost imperceptible to extensive stretches of overwhelming shaking. The present study was proposed to evaluate the antiepileptic activity of ethanolic extract of Phoenix dactylifera& Litchi chinensis, which is assessed by invivo screening models namely, Maximal electro-shock induced seizures in mice and PTZ induced seizures in rats. Seizures were produced in rats and mice by giving electroshock (12 mA, 50 Hz for 0.2 s) in rats and PTZ 1mg/kg b.wi.p for 8 consecutive days. Oral dosing of E.E.P.D, E.E.L.C & E.E.P.D+E.E.L.C modified behavior and also changed their neurochemical estimate. This is determined by monitoring parameters such as disappearance of hind limb extension during epileptic episode and latency to clonic seizure that is found to be 75.01, 87.01, 97.and myoclonic seizure 71.0, 87.05, 65.61 in plant dose 1,2, 1+2 respectively in PTZ induced seizure and reduction in the duration of flexion, extension and stupor convulsion as well as the fatality percentage of electroshocked animals in MES. Furthermore, biochemical parameters such as altered monoamine neurotransmitters which are found to be DA (0.41, 0.60, 0.67); 5HT (0.31, 0.41, 0.64); NE (0.33, 0.47, 0.65) respectively when compared to vehicle and standard control . The rat brain of 1 animal from each group is dissected out hippocampal CA1 and cerebral cortex region is examined for histopathological studies. When the toxic, standard and test group slides were compared with one another, it was found with plant extracts, particularly E.E.P.D that neuronal degeneration is less when compared to toxic but not as much as standard.

Key Words: *Epilepsy, Neurochemical, Phoenix dactylifera, Litchi chinensis, PTZ, MES, Monoamine neurotransmitters.*

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I. Introduction

Epilepsy is a group of problems of the CNS described by paroxysmal cerebral dysrhythmia, showing as brief episodes (seizures) of sudden or unsettling influence of shakiness, with or without spasms, tactile or mental stress. These episodes are erratic and their recurrence is exceptionally factor. Epilepsy has a central beginning in the cerebrum, signs depend upon the site of the center, locales into which the releases spread and postictal discouragement of these areas. [1]

In epilepsy, seizures will in general repeat, and have no prompt fundamental reason while seizures that happen because of a particular reason are not considered to address epilepsy. The reason for most instances of epilepsy is obscure, albeit a few group foster epilepsy as the consequence of mind injury, stroke, cerebrum tumor, and medication and liquor abuse. Epileptic seizures are the aftereffect of over the top and strange cortical nerve cell movement in the cerebrum. This could be finished by doing imaging of mind and blood tests.[2]

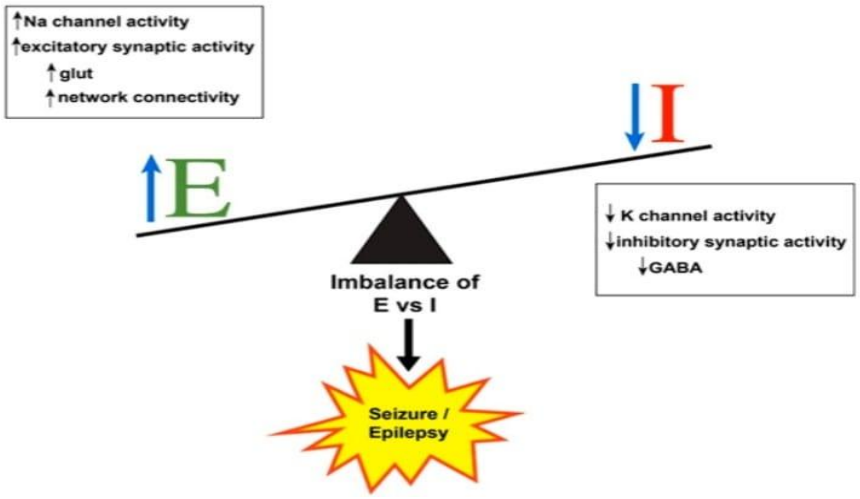


Fig.1)pathophysiologyofepilepsy

Neurons are nerve cells, which impart through film potential. Particles are substance couriers with positive or negative charges that cause an electrical sign to be sent by the mind. A neuron is at a resting layer potential when the charge inside the cell is more negative than the outside. When a neuron is grinding away, its activity potential is locked in through the adjustment of equilibrium of good and adverse particles and an electrochemical message is sent, which makes the body deliberately or automatically move, feel, or act. Just like this, neurons are electrochemical couriers in the body. During a seizure scene, the layer capability of neurons is changed such that makes neurons be touchy or overactive because of specific upgrades or setting off occasions. As we examined, the reasons for seizures can be known or obscure. Ecological triggers can incorporate noisy commotions, strobe lights, and cadenced music. Clinical triggers incorporate high fevers, diseases, tumors, hypoglycemia, helpless nourishment (causing electrolyte awkward nature), injury, actual weariness, menses, and harmful substances, like meds, liquor, and unlawful medications. Seizures can even have psychosocial triggers, including fear and emotional stress.[3]

II. Material And Methods

The current study is focused on identifying the individual and combination, anti-epileptic effectoftwo different plants. The plants and parts of plants used here are mesocarp of *phoenix dactylifera lin.* and fleshyaril of *lichichinensissonn.* Depending upon the phytochemicals present in them. Generally, for anti-epilepticactivity phytochemicals responsible are carbohydrates, alkaloids, flavonoids, saponins, tannins, sterols, phenols,proteins and triterpenoids according to the literature review. The plants have also been chosen due to theirindigenous nature. The above herbal drug extract is given to wistar rats and mice for evaluation of their anti-epileptic action.In-vivo screening methods used forevaluationof anti-epilepsy activity are **Maximal electroshock induced convulsions, Pentylenetetrazole induced convulsions in rats**. Various examinations are done to identify the anti-epileptic effect such asassessmentofbehaviouralparameters,neurochemicalestimationofmonoaminesinbloodsamples,andmicroscopicexaminationofisolatedratbrainforneuronalactivityinhippocampusandcerebralcortex.monoaminesinbloodsamples,andmicroscopicexaminationofisolatedratbrainforneuronalactivityinhippocampusandcerebralcortex.

III. Phoenixdactylifera

Fig.2)drieddatefruit.

Chemicalconstituents:containscarbohydrates(glucose,sucrose,fructose),alkaloids,steroids,flavonoids,tanninsandvitamins.Fourphenolicacidsandnineboundphenolicacidswereprobablydistinguished. (glucose, sucrose, fructose) , dietary fibres, fats, proteins, minerals, lipids, vitamins, rich inphytochemicalslikephenols,sterols,anthocyanins,carotenoids,procyanidinsandflavonoids.
Medicinaluses:anti-mutagenic,anti-fungal,anti-viral,hepato-protectiveandnephro-protectiveproperties, anti-inflammatory, anti-oxidant property, anti-hyperlipidemic, gastro-protective agent, anti-cancer,immunostimulatory,gonadotropicactivity.[4]

IV. Litchichinensis

Fig.3)lycheefruit

Chemical constituents: All parts of the plant are rich sources of phytochemicals such as epicatechin;procyanidin A2 and procyanidin B2; leucocyanidin; cyanidin glycoside, malvidin glycoside, flavanoids andsaponins;butylatedhydroxytoluene;isolariciresinol;kaempferol;rutin;andstigmasterol.[5]
Medicinal uses: anti-cancer, anti-oxidant, hypoglycemic, anti-bacterial, anti-viral properties anti-inflammatoryactivity,anti-tussive, anti-pyretic, andhaemostatic, analgesicactivity.[6]

Materials:
The fresh fruits of *Phoenix dactylifera*and *litchi chinensis*were obtained from a local manufacturing company.The plant specimens were authenticated by DR. K. MADHAVA CHETTY Assistant professorof botany,DepartmentofPharmacognosy,SriVenkateshwaraUniversity,Tirupathi.
Standard drug:phenytoin (1mg/kg) i.pisusedasareferencestandarddrug.

Otherchemicals:

- Ethanol–solvent forextraction.
- pentylenetetrazoles.c
- Normalsaline– forreconstitutionofplantsP.DandL.C
- EthanolicextractofP.D,L.C,andP.D+L.C

V. Methodology:

1. Extractionmethod: Macerationtechniquewasusedforextractionofplants.Requirementsareasfollows;
Solvent:Ethanol(99.9%)
Apparatus:Porcelainjars,Beakers,Glassdishes,FoilwrapandMuslincloth
Macerationprocess:
The seeds of the fruits were carefully removed and the fleshy region of the fruit (mesocarp) is dried atroom temperature prior to extraction. After drying the flesh, it is crushed into coarse powder (500g) each andthen each one macerated with 1 litre of analytical grade of ethanol for 48 hours. Firstly, in a clean and dryporcelain jar, the grounded drug and ethanol (500ml) is added in 1:2 ratio and the powdered drug is left to besoaked inethanol at room temperature, after24 hours againthe remaining quantity of ethanol (500ml) isinstilled to the same porcelain jar and is again kept aside for another 24 hours. After completion of 48 hours, allthe contents in the porcelain jar was filtered through muslin cloth. Extracts were obtained when the filtrate wasconcentratedbyevaporatingthefiltrateatroomtemperature.

Fig.4)Ethanolicextractofphoenixdactyliferaand litchichinensis

2. Phytochemicalscreening

The crude extract was then screened for the presence of secondary metabolites like; carbohydrates, alkaloids,sterols, phenols, saponins, tannins, flavonoids, proteins, triterpenoids and amino acid by following standardprocedures given in practical pharmacognosy by K.R. Khandelwal and C.K. Kokate. All the chemicals andreagentsusedwereofanalyticalgrade.

3. Experimentalanimals

Male Albino wistar rats weighing 180-200 g, and swiss albino mice 15-25g are fed with food (rat chow) andwater ad libitum, andmaintained at a relative humidity of 65% to 86%, temperature of 23℃ to 25℃, in aschedule of 12 hours of light and 12 hours of dark. All experiments were performed according to the guidelinesoftheEthicalcommittee(CPCSEA).

Fig5)Experimentalratsandmice

4. Acute toxicitystudies

EffectivedoseandLD50oftestdrugsweredeterminedbyperformingATSfollowingOECDguidelines 423. 4 groups of 3 mice and 3 rats each with 5 chosen dosages of the test substance i.e 200mg/kg,400mg/kg, 1600mg/kg, 2000mg/kg by oral gavage. Animals are looked for mortality, signs of gross harmfulnessand lead changes at 30 min, 2, 4 and 6 hours after the starting and therefore consistently for 14 persistent days.Bodyweightisrecordedgoingbeforedosing, andondays7and14.

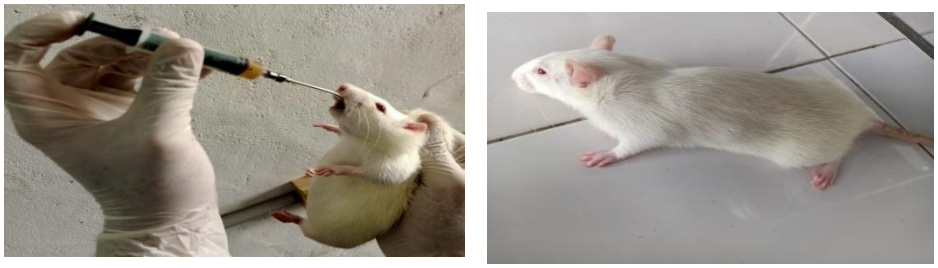


Fig 6)ATSoftestdrugsin experimentalanimals.

1. Experimental design

Albinowistarrats(180-200g), Swissalbinomice(15-25g)

Table 1 :Grouping of experimental animals.

Groups	Ageofanimalsin weeks	Numberof animals	Treatment	Dose
GroupI	12	6	Normalcontrol(Normal saline)	0.2ml/100gp.o
GroupII	12	6	Negativecontrol (pentylenetetrazole)	60mg/kgs.c

GroupIII	12	6	Standard drug(phenytoin)	1mg/kgi.p
GroupIV	12	6	Ethanolicextractof Phoenixdactylifera	200mg/kgp.o
GroupV	12	6	Ethanolicextractof litchichinensis	200mg/kgp.o
GroupVI	12	6	Ethanolic extract ofphoenixdactylifera+ litchichinensis	200mg/kgp.o

2. ScreeningmodelsforAnti-epilepticactivity

i. Maximal electroshock induced convulsions

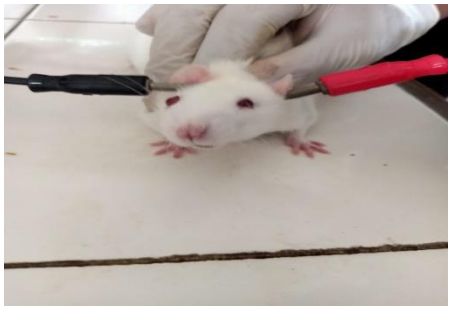
Standard drug: phenytoin (1mg/kg) i.p

- **Procedure :**

The test is begun 60 min after oral treatment with the test compound and the vehicle. A device with ear terminals (Woodbury and Davenport 1952) is utilized to convey the stimuli. The power of stimulus is reliant upon the contraption, 12 mA, 50 Hz for 0.2 s have been utilized. Under these conditions all vehicle treated mice show the characteristic extensor tension.

- **Evaluation :**

The mice are noticed intently for 2 min. Disappearance of the hindleg extensor tonic seizure is utilized as certain basis. Percent of restraint of seizures comparative with controls is determined.



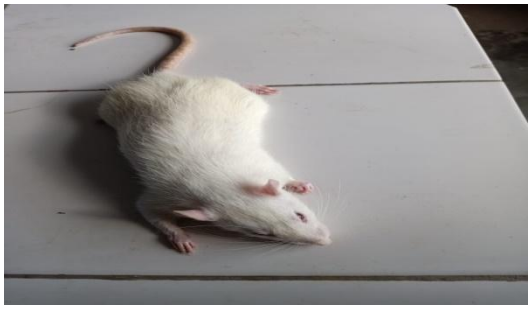


Fig. 29) Electrocuting mice using ear electrodes to induce convulsions

Fig. 30) Tonic hind limb extension seizure in mice

ii. Pentylenetetrazole induced convulsions in rats

Negative control: pentylenetetrazoles.c (60mg/kg)

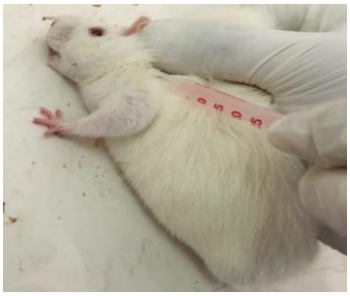
Standard drug: phenytoin (1mg/kg) i.p

- **Procedure :**

Male albino rats 180 and 220g are utilized. Sixty minutes after sc- infusion, 60 mg/kg PTZ are infused subcutaneously.Every animal is set into an individual plastic enclosure for perception enduring 1 hour. Tonic-clonic convulsions andSeizures are recorded. Basically 80% of the rats in the control group need to show seizures.

- **Evaluation :**

The quantity of rodents that are protected in the treated groups is determined as the percentage of influenced rats in the control group. Moreover, the time span between PTZ-infusion and event of seizures can be estimated. The deferral of beginning is determined in examination with the vehicle treated group.



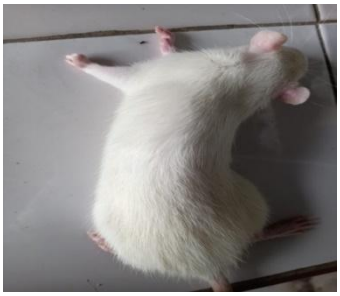


Fig. 31) subcutaneous administration of PTZ in rats
Fig. 32) PTZ induced tonic-clonic seizures in rats

3. Biochemicalestimation

Bloodiscollectedbyretro-orbitalpunctureforassessmentofmono-amineneurotransmittersnamely,dopamine,serotonin,norepinephrine.

Fig. 9)Collectionofbloodsamplesfromexperimentalanimalsbyretroorbitalpuncture.

4. Histopathological studies

Extraction of rat brain: 1 rat from each group wasanaethetized using isoflurane and later euthanized. Brainswere extracted out and kept in10% neutral bufferedformalinforlaboratory testing.Cerebral cortex andhippocampus wasexaminedduringhistologicalstudies.

Fig.10)Extractionofratbrainforhistopathologicalstudies.

VI. Results

1. PhytochemicalresultsofE.E.P.Dand E.E.L.C

Table2 :observation tableof preliminaryphytochemicaltestof E.E.P.PandE.E.L.C

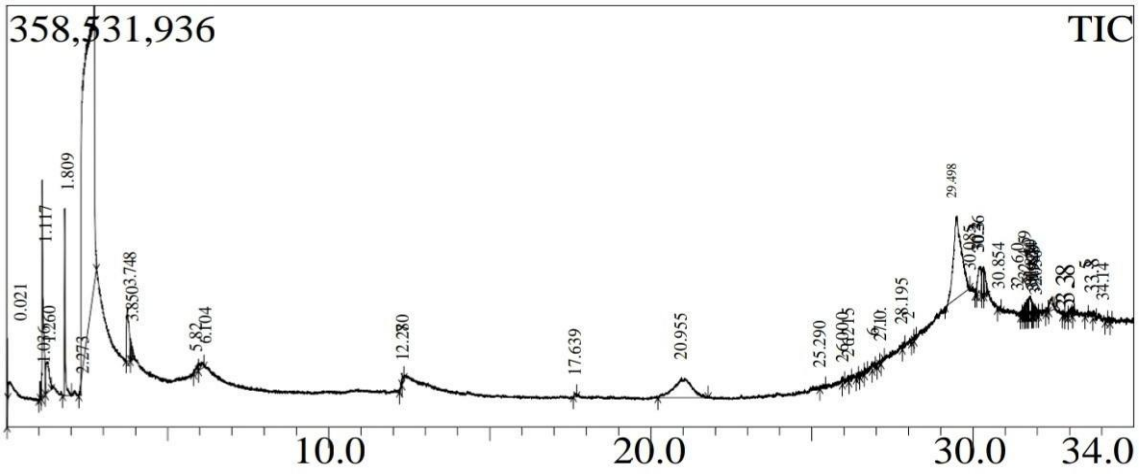
Assay	E.E.of*phoenixdactylifera*	E.E.of*litchichinensis*
Carbohydrates		
Molisch'stest	+++	++
Osazonetest	–	–
Testforketones(selivanoff'stest)	++	+++
Barfoed'stest	+.	–
Alkaloids		
Dragendroff'stest	++	–
Hager'stest	+	–
Mayer'stest	–	–
Sterols		
Salkowski'stest	+	–
Libermann-Burchard'stest	++	+++
Phenols		
Ferricchloridetest	+	+
Leadacetatetest	–	++
Saponins		
Frothtest	+++	+
Foamtest	–	–
Tannins	+	+++
Flavonoids		

Alkalinereagenttest	++	+
Leadacetatetest	++	+++
Ferricchloridetest	+	–
Proteinsandamino acid		
Biurettest	–	–
Millon'stest	+++	+++
Ninhydrintest	–	+
Triterpenoids	++	+

+ =positive,-=negative

Ethanolicextractofthemesocarpof*phoenixdactylifera*showedpresenceofcarbohydrates,alkaloids,flavonoids, saponins, tannins, sterols, phenols, proteins and triterpenoids. Whereas, Ethanolic extract of the fruitof *litchi chinensis*had shown the presence of carbohydrates, sterols, phenols, saponins, flavonoids, tannins,triterpenoidsandproteinsandaminoacids.

2. GCMSanalysis ofphoenixdactylifera



s.no	Retentiontime	Chemicalconstituents	Area%	Uses
1	20.955	Dimethyl Sulfoxide	11.38	**Anti-epileptic,** analgesic
2	1.809	1,5-Heptadien-3-yne	4.55	**Anti-epileptic,** analgesic, anti-bacterial.
3	3.784	Methyl methanesulfonate	4.21	**Anti-epileptic,** anti-psychotic**,** alkylating agent, anti-cancer.

Table 3. GCMSanalysis ofphoenixdactylifera

2. GCMSanalysisof ethanolicextractof*litchichinensis*

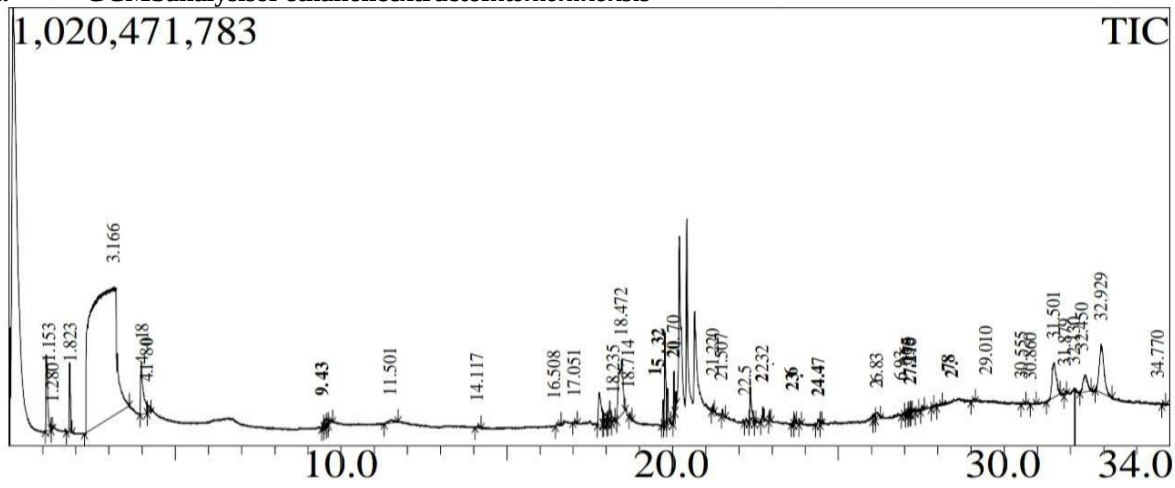


Table4)GCMSanalysisofE.E.L.C.

S.no	Retentiontime	Chemicalconstituents	Area%	uses
1	26.410	N-ethoxycarbonylhydrazon	2.03	**Anti-epilepsy,** anti-bacterial, immunomodulator,anti-diabatic, anti-viral.
2	9.550	4-hydroxyadamantan-2-one	1.76	**Anti-epileptic,** anti-viral, treatment of influenza.
3	32.930	lupeol	4.38	**Anti-convulsant,** Anti-cancer, anti-inflammatory, dietary triterpene.

3. Acutetoxicitystudy

ATSfortheE.E.P.DandE.E.L.CwerecarriedoutinratsandmiceasperOECDGuidelineNo.423.Theresultsofthesestudiesareasfollows:

LD50:lethaldoserangeforethanolicextractofboth theplants couldbeconsideredtobeabove2000mg/kg.

ED50:1/10thofthemedianlethaldose(2000mg/kg)thatis200mg/kgwasconsideredas effective.

4. Evaluationofbehavioralparameters.

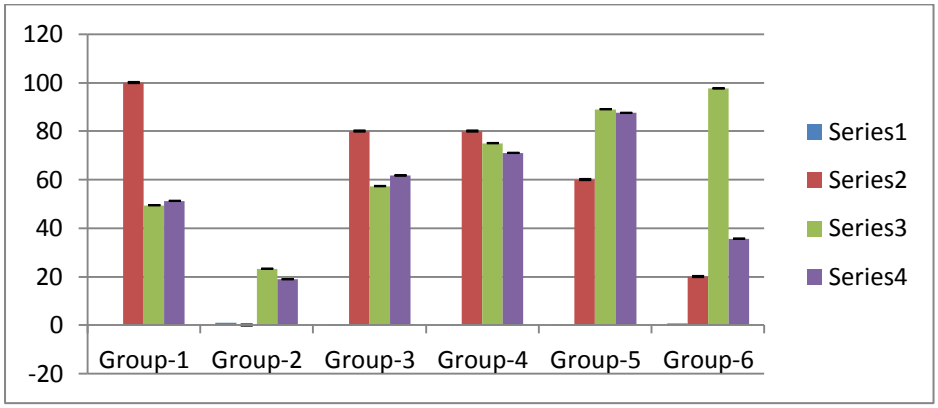
Anti-epileptic activity

a) Pharmacological evaluation of anticonvulsant activity of E.E.P.D and E.E.L.C, E.E.P.D + E.E.L.C usingPentylenetetrazol-induced model

Table 5) EffectsofE.E.P.D and E.E.L.C, E.E.P.D + E.E.L.C usingPentylenetetrazolinduced(PTZ) anticonvulsant.

Treatment	Parameters			
	No. ofanimal convulsed	Animal protected(%)	Latency toClonicSeizures	Latency toMyoclonicSeizure
Normal control	0/6 (0.00)	100	49.41±0.25	51.21±0.08
Negative control: pentylenetetrazole 60mg/kg s.c	6/6 (1)	0	23.22±0.09	18.90±0.65
Standard dose: Phenytoin 1mg/kg	1/6 (0.16)	80	57.3±0.74**	61.7±0.29**
Plant 1: E.E.P.D 200mg/kg	1/6 (0.16)	80	75.01±0.71**	71.0±0.42**
Plant 2: E.E.L.C 200mg/kg	2/6 (0.33)	60	89.01±0.69**	87.5±0.99**
Plant 1+2: E.E.P.D 100mg/kg + E.E.L.C 100mg/kg	4/6 (0.66)	20	97.61±0.31*	35.61±0.90

Values are expressed as mean ± SEM (n = 6). $^{**}P < 0.001$ and *P <0.05 vs. Vehicle (One-way ANOVAfollowedbyDunnett'stest).PTZ:Pentylenetetrazol,i.p:Intraperitonial,s.c:subcutaneous.

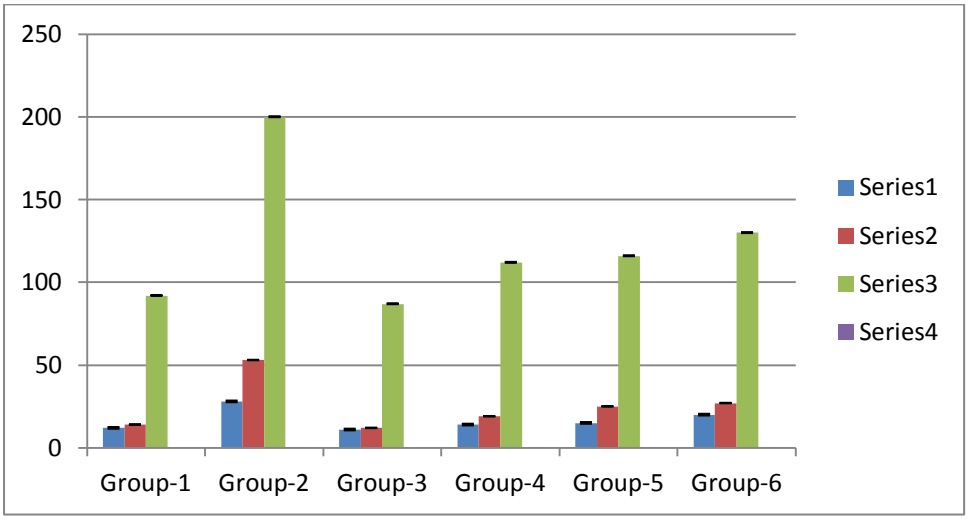


b) MaximalElectroshockInducedConvulsion

Table6)Effect of E.E.P.D and E.E.L.C, E.E.P.D + E.E.L.C inMaximalElectroshockinducedconvulsion.

Sample	NumberofAnimals(n)	DurationofConvulsion(Time inSec)			Death %age
		Flexion	Extensor	Stupor	
Control	6	12±0.05	14±0.03	92±0.4	0/6 (0.00)
Toxic control	6	28±0.25	53±0.08	200 ± 0.52	3/6 (0.5)
Standard (Phenytoin 25, i.p)	6	11±0.36**	12 ± 0.22**	87 ± 0.36*	0/6 (0.00)
Plant 1: E.E.P.D 200mg/kg	6	14±0.38**	19±0.76**	112 ± 0.50*	1/6 (0.16)
Plant 2: E.E.L.C 200mg/kg	6	15 ± 0.38**	25 ±0.07*	116 ± 0.30*	1/6 (0.16)
Plant 1+2: E.E.P.D 100mg/kg + E.E.L.C 100mg/kg	6	20±0.78*	27 ±0.76*	130 ± 0.32*	1/6 (0.16)

All valuesexpressed as mean±SEM; n=6 rats in each group, by one-way ANOVA followed byDunnet'st-Test(comparedwithcontrolgroup)*p<0.05and**p<0.01,i.p-intraperitoneally,p.oper oral.



5. Biochemical estimationofeffectsof*phoenixdactyliferaand litchichinensis*onmonoamines levelinNon-stressedandstressedrats.

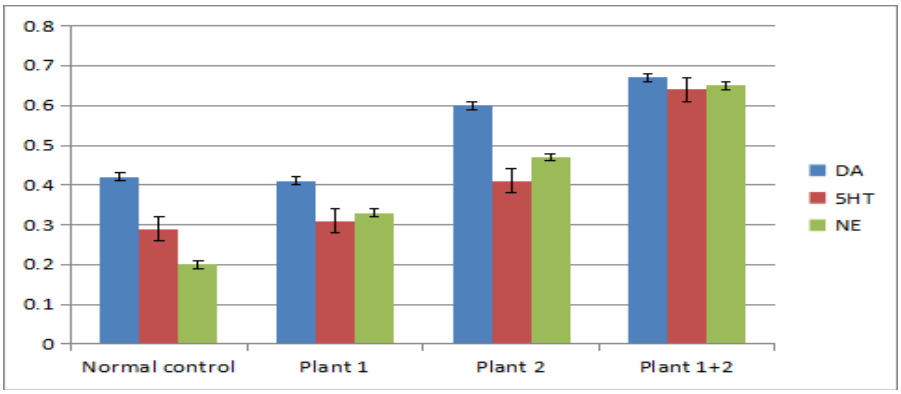
Effect of E.E.P.D (200mg/kg)p.o, E.E.L.C (200mg/kg)p.o, E.E.P.D (100mg/kg)+ E.E.L.C (100mg/kg)p.o orvehicle(10ml/kg)p.oon5-HT,DAandNElevelinbloodsamplesofnonstressedandstressedexperimentalrats.

Table 7)Effectof E.E.P.DandE.E.L.C,E.E.P.D+E.E.L.Conmonoamineslevelinbloodsamplesof Non-stressedandstressedrats.

Sample	DA	5HT	NE
Control:Vehicle	0.42±0.05	0.29±0.04	0.20±0.02
Plant1: E.E.P.D (200mg/kg)p.o	0.41±0.7***	0.31±0.08**	0.33±0.05**
Plant2:E.E.L.C (200mg/kg)p.o	0.60±0.07**	0.41±0.29**	0.47±0.06**

Plant 1 + 2 : E.E.P.D(100mg/kg)+E.E.L.C (100mg/kg)po	0.67±0.01	0.64±0.04*	0.65±0.08*

Experimentaldatawas analyzedby two-wayANOVA testandexpressedasmean±SEM(n=6), $^{*}p<0.01$comparedtononstressedvehiclegroup, $^{**}p<0.001$comparedtostressed +vehiclecontrolgroup.



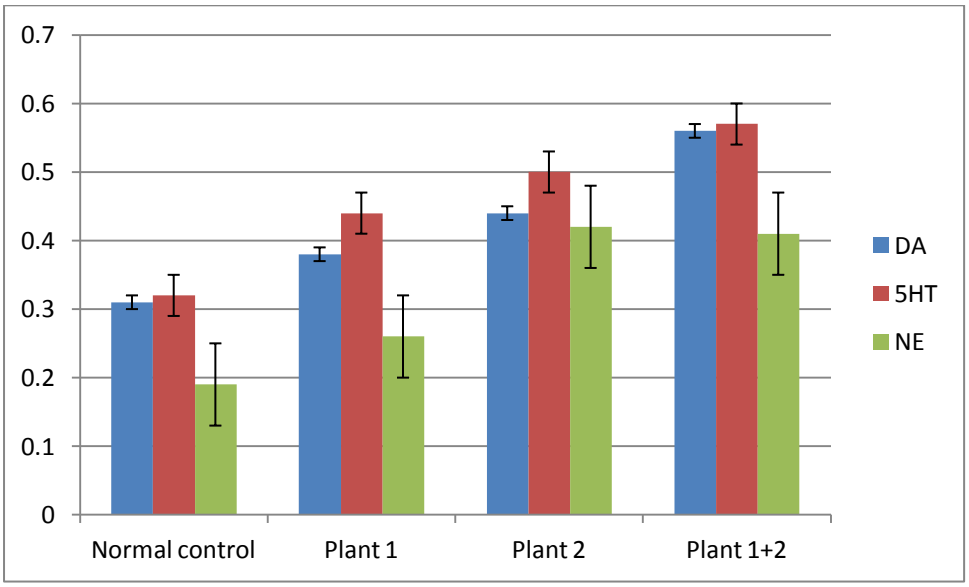
6. Biochemical estimation of effects of *phoenix dactylifera* and *litchi chinensis* on monoamines level in Non-stressed and stressed mice.

Effect of E.E.P.D (200mg/kg) p.o, E.E.L.C (200mg/kg) p.o, E.E.P.D (100mg/kg)+ E.E.L.C (100mg/kg)p.o orvehicle(10ml/kg) p.oon5-HT,DAandNElevelinblood samples ofnonstressedandstressed mice.

Table8)Effect ofE.E.P.D and E.E.L.C, E.E.P.D + E.E.L.C on monoamines level in blood samples of Non-stressed and stressed mice.

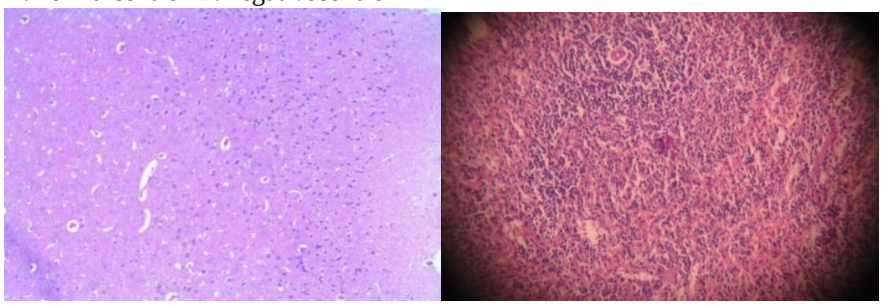
Sample	DA	5HT	NE
Control: Vehicle	0.31±0.04	0.32±0.05	0.19±0.02
Plant 1 : E.E.P.D (200mg/kg)p.o	0.38±0.07**	0.44±0.28**	0.26±0.06**
Plant 2 : E.E.L.C (200mg/kg)p.o	0.44±0.06**	0.50±0.10*	0.42±0.07*
Plant 1 + 2 : E.E.P.D (100mg/kg)+ E.E.L.C (100mg/kg)p.o	0.56±0.07**	0.57±0.05	0.41±0.04*

Experimental data was analyzed by two-way ANOVA test and expressed asmean ± SEM (n=6), $^{*}p<0.01$ compared to nonstressed vehicle group, $^{**}p<0.001$ compared to stressed + vehiclecontrolgroup.

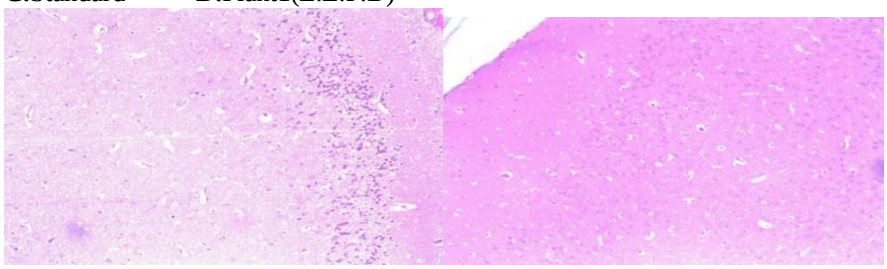


7. Histopathologicalstudies.Cerebellarcortex

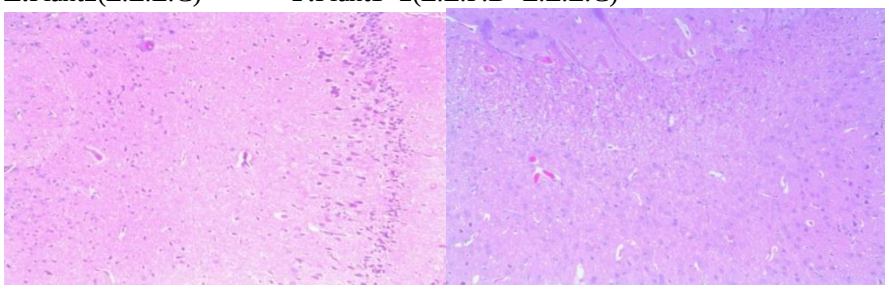
A.Normalcontrol **B.**Negativecontrol



C.Standard **D.**Plant1(E.E.P.D)



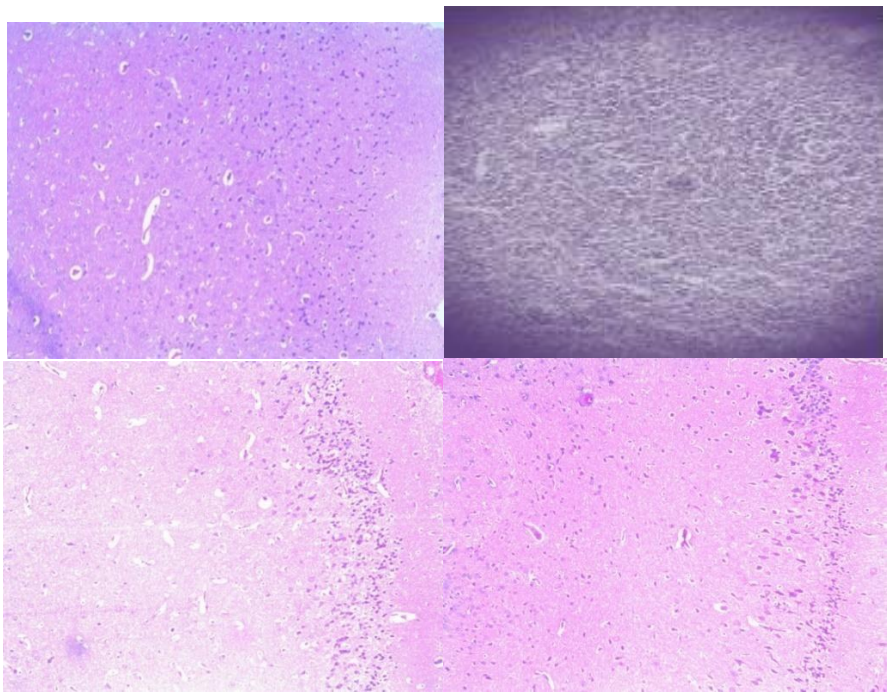
E.Plant2(E.E.L.C) **F.**Plant1+2(E.E.P.D+E.E.L.C)



HippocampusCA1area

G.Normalcontrol**H.**Negativecontrol

I. Standard**J.**Plant1(E.E.P.D)



K.Plant2(E.E.L.C) **L.**Plant1+2(E.E.P.D+E.E.L.C)

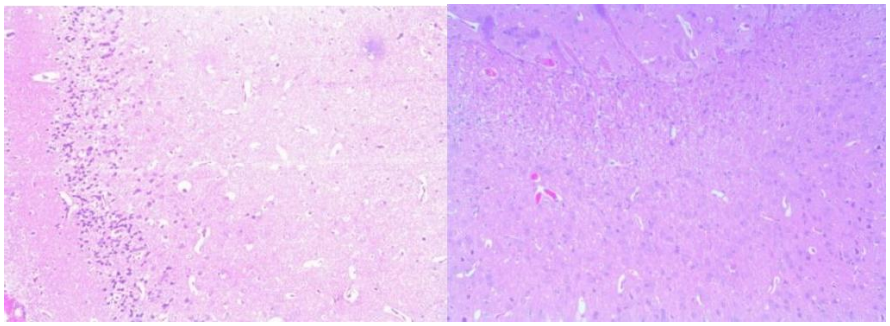


Fig.11)Histopathology slidesof cerebralcortexandhippocampusof albinowistarrats.

Photomicrographsillustratingstainedsections(x400,scalebar=50μm)ofWistarrats.(A-F):Cerebellar cortex sections, (G-L): Hippocampal CA1 sections. (A, G): Control sections representing normalarchitecture, neurons having large vesicular nuclei, and small dense neuroglial cells. (B, H): Negative controlgroups channeling shrunken degenerated neurons with perineural spaces that also exhibit areas of neurons loss,tiedupsurroundingneuroglialcells,wideneuropilandcongestedcapillary.(C,D,E)intheupperpaneland(I,J, K) in the lower panel shows treated groups normal neural architecture with large vesicular nuclei with minuteperineuralspacesindicatingfewtetheredneuroglialcells.(F,L)demonstratingtreatedneuralcellswithreduction inthethicknessofpyramidallayerandgranularcelllayerwithfewareas ofneurons loss.

IV. Discussion And Conclusion

*Phoenix dactylifera*is popular for its nutritional value and numerous medicinal properties. It is rich infatty acids like stearic acid, palmitic acid, and linoleic acid. *Phoenix dactylifera*due to the presence of richpheonlic content such as caffeic acid, ferulic acid, catechin, procatechuic acid, gallic acid, p-coumaric acid,resorcinol, syringic acid and flavonoids such as quercetin, luteolin, apigenin, rutin, isoquercitrin is an anti-oxidant.Allthesephytochemicalconstituentarehighlybeneficialformanydiseases.[7]

*Litchi chinensis*is widely accepted in many sub-tropical and tropical regions as a healthy, beneficiaryfruit.Usedforcuringnumberofailments,similartodates;litchiisrichinphenolicandflavonoidcontent. Polyphenols and flavanols are well known for their anti-epileptic activities in different animal models. Anti-epileptic propertiesofpolyphenols arecloselylinkedtotheiranti-oxidantproperties.

The GCMS analysis of E.E.P.D is undertakeninthe present investigationconfirms the chemicalconstituents such as Dimethyl Sulfoxide, 1,5-Heptadien-3-yne, Methyl methanesulfonate which arescientifically known to have anti-epileptic effect. The GCMS analysis of E.E.L.C confirms the phytochemicalconstituents namely, N-ethoxycarbonylhydrazon, 4-hydroxyadamantan-2-one, lupeolwhich numerous studies andresearches demonstratedtopossessanti-epilepticeffect.

The acute toxicity studies were conducted according to the OECD guidelines 423. It was found that theextracts of phoenix dactylifera and litchi chinensis even at the 2000mg/kg dose had not shown any signs oftoxicityconfirmingitsnon-toxicnature.

During the study of behaviouralparameters as wellas neurotransmitters,the extracts of phoenixdactylifera and litchi chinensis individually have shown results almost like the standard dose. While the extractof phoenix dactylifera being the most effective one throughout the study. While the combination of the plant'sextracts seemedtohaveverylessimpactcomparativetotheirindividualdoses.

Histological slides of group 4 (D,J) and 5 (E,K) displayed to be effective,whilst group 4 (D,J)showed the most effective action and group 6 (F, L) were seen exerting the least effect comparative to standardactivity.

Outcomes of present work indicate that *phoenix dactylifera*and *litchi chinensis*exert anti-convulsanteffects by altering behavioural and molecular patterns in the hippocampal and cortical regions of rats exposed tostress. Therefore, the present studies confirmed the presence of such phenols and flavonoids and their content byperforming GCMS analysis of the test plants. i.e*phoenix dactylifera*and *litchi chinensis*and evaluated theseconstituents for the active anti-epileptic activity in animal models as they possess similarphysiology tohumansforthepositiveresultandactiveneurologicaleffectofthesedrugsinhumans.

Bibliography

[1]. Duncan JS, Sander JW, Sisodiya SM, Walker MC. Adult epilepsy. The Lancet. 2006 Apr 1;367(9516):1087-100.
[2]. Tripathi KD. Essentials of pharmacology. New Delhi, Jaypee brother's medical publishers Pvt. Ltd.1999. 2004;256.
[3]. Shorvon S, Perucca E, Engel Jr J, editors. The treatment of epilepsy. John Wiley & Sons; 2015 Sep 15.
[4]. AbuowfIA,AbuowfA.HepatoprotectiveActivityofDatePalm(Phoenixdactylifera)PollenGrainsinRats.UniversityofKhartoum. 2009 Dec.
[5]. KilariEK,PuttaS.BiologicalandphytopharmacologicaldescriptionsofLitchichinensis.Pharmacognosyreviews.2016Jan;10(19):60.

[6]. IbrahimSR,MohamedGA.Litchichinensis:medicinaluses,phytochemistry,andpharmacology.Journalofethnopharmacology.2015Nov4; 174:492-513.
[7]. Subakanmani.S,Murugan.Setal.EvaluationofNeuropsychopharmacologicalEffectsofHypericumhookerianumExtractsonSwissAlbino MiceDepartmentofBiotechnologyKarunyaUniversity(15/06/2015).

SheemaTarannum. "Evaluation of Anti-Epileptic Activity of Ethanolic Extract of Phoenix Dactylifera Lin. And Litchi Chinensis Sonn.Using Experimental Animals." *IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS)*, 16(6), (2021): pp. 08-20.