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EFFECT OF ISOPROTERENOL AND THYROXINE IN HERBAL DRUG USED AS CARDIAC HYPERTROPHY

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ABSTRACT

OBJECTIVE

The impact of A. calamus extract and C. Pereira extract on heart hypertrophy caused by isoproterenol. A. calamus extract & C. Pereira extract on heart hypertrophy by thyroxine.

MATERIAL AND METHOD

a. Animal House Pharmacy School (Wistar rats), measuring 180-250 grammes, BIT Meerut (UP). One week before the research began, they were kept separately in polypropylene cages in a quarantine room.
b. C. Pareira and A. calamus rhizomes from the School of Pharmacy at the Medicinal Garden, BIT, Merrut, UP, India.

METHODS

- Influence of C. Pareria Extract on Isoproterenol- induced cardiac hypertrophy in rats.
- Influence of A. Calamus Extract on Isoproterenol- induced cardiac hypertrophy in rats. Influence of C. Pareria Extract on Thyroxine- induced cardiac hypertrophy in rats
- Influence of A Calamus Extract on Thyroxine- induced cardiac hypertrophy in rats.

RESULTS

In comparison with control and C. Pareira and A. Calamus as well as amlodipine treated groups in the ISO treatment community, no major alteration was identified in the MAP. There was no MAP change in T4 compared with controls and groups C. pareira and amlodipine treated with T4. Significantly increased T4 ($P < O.O1$) HR administration against power.No significant change in HR was detected in C. Pareira and A. calamus.

CONCULSION

Cissampelos pareira and Acorn calamus effect in cardiac hypertrophy induced by isoproterenol

Isoproterenol chronic administration (5 mg/lcg/day, 30 days), cardiac hypertrophy, cardiac weight ratio, angiotensin II, tumour factor necrosis, calcineurin, oxide/reactive nitrients, NaV K'^-ATPase, antioxidant and NaVK'^-ATPase, active component antioxidants Both of these changes in the therapy of Cissampelos pareira (100 and 200 mg/kg/day, 30 days) and Acorus calamus (100 and 200 mg/kg/day, 30 days) were substantially enhanced.

Effect of thyroxin-induced cardiac hypertrophy on Cissampelos pareira and Acorus calamus

The continuous thyroxine (0.1 mg/kg/day, for 30 days) was characterised by hypertropy of the heart and heart and body weight ratios, Angiotensin II, tumour necrosis factor, calcineurine, nitric oxide and thyrobarbituric acid, and a substantial decrease. Hypertrophy of the heart Cissampelos pareira (100 and 200 mg/kg/day) and Acorus calamus (100 and 200 mG/kg/day) have been decreased to almost normal in the next 30 days.

KEYWORDS: A. CALAMUS, C.PARERIA, CARDIAC HYPERTROPHY, HERBAL PLANT. DISEASE

INTRODUCTION

Hypertrophic cardiomyopathy (HCM) is associated with thickening of the heart muscle, usually under the aortic valve in the septum between the ventricles. This can result in heart wall hardening and abnormal aortic and mitral valve function, both of which can impair normal blood flow from the heart.HCM treatment is based on whether the blood flow path from the heart (called the outflow tract) narrows, how the heart functions, and whether arythmias

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are present.Treatment is designed to prevent problems and symptoms and includes risk identification and regular follow-up, changes in lifestyle, drugs and procedures, as needed. The autosomal dominant congenital condition associated with the genetic mutation of the heavy betamiotic chain is cardiomyopathy (HCM).[1,2] The blockage of the left ventricular outflow tube with asymmetric septal hypertrophy is related to myofibrillary disarray and interstitial fibrosis, which results in diastolic and myocardial ischemia that may lead to syncope or sudden death. More than 400 mutations with significant variations in disease penetration and clinical manifestation have been found. The cornerstone of imaging is two-dimensional echocardiography, while the alternatives are magnetic resonance imaging (MRI) and computed tomography (CT). In increasingly complex instances, transthoracic echocardiography and cardiac MRI both take on an important role in diagnostic and therapy planning. The new recommendations reflect current proof of diagnostic methods such as electrocardiography, imaging and genetic testing. [3,4] Cardiac imagery has been shown to play a key role in diagnostic and clinical decision-making in HCM patients. Naturally, the major imaging tool remains echocardiography for diagnosis, obstructive physiology determination and risk assessment. The important impact of cardiovascular magnetic resonance imaging is also recognised for its diagnostic capabilities and usefulness in predicting and directing decisions for implantable cardiovascular-defibrillator insertion (ICD). Clarity was provided with reference to sudden cardiac arrest risk assessments (SCAs), including acknowledgment of new risk variables such as apical aneurysm, reduced left systeolic ventricular function and significant enhancement of gadolinium. Providers who care for minors are suitable for guiding HCM SCA risk factors in children who have differing ICD implantation risk thresholds in comparison to adults with HCM.[5,6]

The COVID-19 or coronavirus illness caused by severe acute coronavirus 2 syndrome outbreak in Wuhan, China, has generated a high 10.5-percent and 6-percent mortality pandemic attention in patients with heart disease and hypertension, respectively.One of the explanations for this high mortality rate is the likely abundance in the cardiovascular system of ACE type 2 receptors which are closely linked with the COVID-19 spike protein and help to inside the cell, resulting in acute cardiac injury (ACI). More than 7% of COVID-19 cases are reported to have ACI of this kind. Ten times higher deaths have been seen in COVID-19 patients experiencing an increase in high-sensitivity (hs)-troponin. Most of the patients who died of COVID-19 had increased hs-troponin. Over 15% of people with COVID-19 have various forms of arrhythmia. All these numbers indicate the importance of cardiovascular pathology in COVID-19 patients. [7,8] The Renin-angiotensin-aldosterone system controversy inhibits the use in patients with COVID-19 and careful handling of cases of acute coronary syndrome completely undermines mythical patterns and sets the standard guidelines for fatality with timely diagnosis and treatment of COVID-19-induced ACI. In this study, we attempted to summarise the existing COVID-19 evidence of cardiac injury and suggest the consequences of its correct diagnosis and treatment.[9,10]

HERBAL DRUGS

Cissampelos pareira

a. Botanical name: Cissampelos pareira Linn.
b. Family; Menispermaceae
c. Common Name: Ambastha or Laghupatha
d. Part used: Root

2. **Habit and Habitat**

A seasonal, high, slender, dioetious, permanent, climber usually stretches up to 2 000 metres above sea level across the topical and subtopical India. It is also available in Mexico and South America.

3. **General description**

C. pareira was frequently used to treat several ailments in Ayruveda as a medication. The leaves of C, pareira juice have already been declared cardiotonic.

4. **Pharmacognostic studies**

Macroscopic description:

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The dried medicine should be produced as a complete or divided portion of a cylindrical, oval or compressed part between one and four inches in diameter or four feet in lengths. The external is gray-brown, the inside is yellowish, translucent wood with sometimes imperfect well-defined concentrated and medullary rays. At first taste, sweet and aromatic, deeply bitter afterwards. [11,12]

FIG: 1 C. Pareira Plant

Acorus calamus

Botanical name: Acorus calamus Linn.

1. Family: Araceae
2. Common Name: Vacha or Sweet flag
3. Part used: Rhizome
4. **Habit:** A semi-aquatic marshy plant with perennial aromatic rhizomes that grows freely in the Himalayas across India to a height of 2,200 m. It is prevalent throughout Europe and Korea as well.
5. **General description**: A. calamus was often used in Ayruveda as a treatment for many illnesses Root and rhizome are widely used to cure general illnesses such as emesis, diuresis, dyspepsia, stomach, fibre and bronchitis. The calming, analgesic, respiratory, diuretic and slightly hypotensive effects of ethanol rhizome extract were observed in this plant.
6. **Pharmacology studies**

Macroscopic description:

The rhizome is bright, bright, light brown with leading nodes and intemodes. To cylindrical flattened. Nodal regions of hair and leaf scars are large. The internodes are broken and broken. On the surface there is a zig-zag line of circular root scars. The transverse incisions are rosy cream and are distinguished in central and peripheral sections. The freshly exposed surface with a pleasant scent is gritty and porous.[13,14]

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FIG:2 A. Calamus plant

MATERIAL AND METHODS

Animal House Pharmacy School (Wistar rats), measuring 180-250 grammes, BIT Meerut (UP). One week before the research began, they were kept separately in polypropylene cages in a quarantine room. This study was assessed and adopted in a pdf letter dated 23/01/2021 (IAEC) by the Committee on Institutional Animal Ethics (letter enclosed). Hot water, standard lab settings and a dark ambient temperature of 28±2°C are kept in polypropylene cages for 12:12 hours. All rats are packed with pellet rats (MVK nutritional solutions, Meerut UP). Tests conducted by the Animal Control and Supervision Goals Committee in accordance with the standards put out in Ref 1147/AB/07/CPCSEA (CPCSEA).

Plant materials

C. Pareira and A. calamus rhizomes from the School of Pharmacy at the Medicinal Garden, BIT, Merrut, UP, India.

PHYTOCHEMICAL ANALYSIS

1. **ALKALOID TEST:** For 20 minutes 500 mg of vegetable material (extract) were processed on a 500 ml methanol water bath. Dragendorffs, Hager, Mayer and Wagner were administered separately to each tube; each test tube revealed the presence or absence of any precipitate.

2. **Amino acid test:** A few drops of 1% alcohol-based ninhydrine are added in 0.5 ml of drug extract. Developments in blue or violet colour have revealed the presence of amino acids.

3. **Borntrager's test**: 1 ml (10 percent) of diluted ammonia was added to the herbal medicines extract and the combination treated. Any change in colour has been recorded. Antln'aquinone derivatives have a (lower) layer of pink-red ammonia.

4. **Essential oil test:** A few drops of 1 M alcoholic dilaromate and phenolphthalein were added to a 0.5 ml of herbal extract in a clean test tube. Soap formation suggested the presence of essential oil.

5. **Fehling test :** 1. Residue in water on water bath was solved (herbal drug extract). The test tube was equipped with two ml of this solution and one ml of each Fehling's A and B solutions. The mixture was then mixed and cooked in a water bath for 10 minutes. Brick-red precipitate, which shows the presence of sugar reduction.

6. **Flavonoid test:** The extract of herbal medicines in the boiling water bath has become dry. Diluted sodium hydroxide (NaOH) for the residue was treated, followed by diluted, soluble, and colourful hydrochloric acid (HCl), A bright NaOH solution that turned colourless with diluted HCl indicated that flavonoids existed.

7. **Salvasld sterol test**: On a 2 ml ethanol extract, a few drops of concentrated sulfuric acid (H2SO4) were added. The formation of a purple ring on the top surface indicates the presence of sterols.[15,16]

8. **Steroid Test**: Two millilitres of acetic anhydride have been added to 0.5 g herbal extract 2 ml H2SO4. The colour changed from purple to blue and green to indicate the presence of steroids.

9. **Ferric chloride solution test:** For the extract, 15 percent ferric chloride solution was employed. The resultant colour was noticed. A blue hue, the presence of condensed tannins and a hydrolysable tannin were shown to be green.

10. **High-performance chromatographic analysis of thin layer:**

    C. pareira root extract stock solution (1 mg/ml) in methanol has been produced and analysed by HPTLC (Camag). Bebeerine, the calibration curve was produced. n-butanoI;glacial acetic acid' was the solvent technique used (6:2:2). TLC Scanner 3 (Camag) has scanned the plates in 366 nm mode.

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11. **High performance Liquid chromatographic [HPLC] analysis**:

HPLC (Shimadzu LC-10 AD VP) For C. pareira root extract with a root photodiode detector was analysed for (SPD-MIOA VP). The chromatographic conditions were as follows. Column; Zorbax Eclipse XDB-C18 (14.6 x 150 mm), column for storage: (5 4.6 x 12.5 mm). Then 10 ia.1 of the sample was fed into the SIL-IOAD VP auto sampler. The solvent system employed was 68 percent ammonium acetate, 14 mM tree thylamine (TEA), 4.88 and 34 percent acetonitrile. The rate of flow was maintained at 1 ml/min and 17 min. The column temperature was 3G°C with a wavelength of 235 nm. Dissolve 1 mg of the dried matter in 1 ml of acetoniti'ile and filter with a filter from samples of 0,46 am (nylon).[17]

12. **Study of gas chromatography combined with mass spectrometry (GC-MS):**

A. Calamus rhizome extract with chromatographic mass spectrometry has been analysed (GC-MS-Agilent). The criteria in chromatography were as follows: Column: ZB-1 Zebron (length 30.0 m, diameter 0.25mm, film thickness 0.25 um). In addition, the GC specification includes a 40 °C initial injection system, 250 °C injection system, 280 ° C transmission line, 2 min solvent delays, 10 °C/min wet temperature and 140 °C storm.

Experimental protocol

Model I

Protocol I: Influence of C. Pareria Extract on Isoproterenol- induced cardiac hypertrophy in rats.

Group Categories	Treatment
C	Normal Saline (0.5ml/kg/day) for 30 days
ISO	Isoproterenol (5mg/kg/day) for 30 days
CIS50	C. Pareria alone for 30 days 50 mg/kg/ day)
CIS100	C. Pareria alone for 30 days (100 mg/kg/ day)
CIS200	C. Pareria alone for 30 days (200 mg/kg/ day)
AML	Amlodipine given alone for 30 days (9 mg/kg/day)
CIS 50 +ISO	C. Pareria along with isoproterenol for 30 days (50 mg/kg/ day)
CSI100 +ISO	C. Pareria along with isoproterenol for 30 days (100 mg/kg/ day)
CSI200 + ISO	A. Pareria along with isoproterenol for 30 days (200 mg/kg/ day)
AML + ISO	Amlodipine given along with isoproterenol for 30 days (9 mg/kg/day)

Protocol II: Influence of A. Calamus Extract on isoproterenol- induced Cardiac hypertrophy in rats

Group Categories	Treatment
ACO 50	(50 mg/kg/ day) alone for 30 days
ACO100	(100 mg/kg/ day) alone for 30 days
ACO 200	(200 mg/kg/ day) alone for 30 days
ACO 50 +ISO	(50 mg/kg/ day) along with isoproterenol for 30 days
ACO100 +ISO	(100 mg/kg/ day) along with isoproterenol for 30 days
ACO200 + ISO	(200 mg/kg/ day) along with isoproterenol for 30 days

Model II

Protocol III: Influence of *C. Pareira* extracts on thyroxine – induced Cardiac Hypertrophy in Rats

Group	Compounds
C	Saline (0.5 ml/kg/ day) for 30days
T4	Thyroxine (0.1 mg/kg/day)for 30 days
CIS50+ T4	C. Pareira 50 mg/kg/day with thyroxine for 30 days
CIS100 + T4	C. Pareira 100 mg/kg/day with thyroxine for 30 days
CIS 200 + T4	C. Pareira 200 mg/kg/day with thyroxine for 30 days

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AML +T4	Throxine + amlodipine (9mg/kg/day) for 30days

Protocol IV: Influence of *A. Calamus* extract on thyroxine – induced Cardiac hypertrophy in rats

Group	Compounds
ACO50+ T4	50 mg/kg/day with thyroxine for 30 days
ACO100 + T4	100 mg/kg/day with thyroxine for 30 days
ACO 200 + T4	200 mg/kg/day with thyroxine for 30 days

RESULT

PHYTOCHEMICAL STUDIES

C.pareira ethanol extract was phytochemically tested for alkaloids, flea-free glycosids, steroids, tannins and essential oils (Table 1) and for amino-acids, flavonoids and glycosides, tannins and essential oils (Table 1) and for an ethanolic rhizomic extract from A. calamus (Table 2).

Chromatographic high performance, chromatographic layer thin, chromatographic high performance

There were a variety of isolated compounds and their Rf or Rt respective values. C. pareira's HPTLC revealed seven pinnacles in which the value of Rf was 0.65 and beberine was equal to (Fig. 14), and the five pinnacles of HPLC were Rt 8.35 which is the main component of C. pareira. Bebeerine was 0.19 percent wAv in the study.

Mass spectrometry (GC-MS) study of gas chromatography GC-MS

molecular pitches with typical retention times of the parent analysis, shown on the complete ion chromatograph (TIC) of the analysis, were detected by GC-MS At Rt 8.55, asarone was detected as the principal constituent in the A. calamus rhizome

TABLE 1: ANALYSIS OF PHYTOCHEMICAL TEST FOR C. PAREIRA AND CALAMUS

TEST	A. CALAMUS OBSERVATION	C.PARERIRA OBSERVATION
Dragendroff , Hager, Mayer, Wagner for Alkaloids	-	+
Ninhydrin test for amino acid	+	-
Borntranger test for anthraquinone	-	-
Alcoholic potassium test	+	+
Fehling test	+	+
Sakowski test for terpenoids	+	+
Ferric chloride	+	-

+ POSITIVE, – NEGATIVE

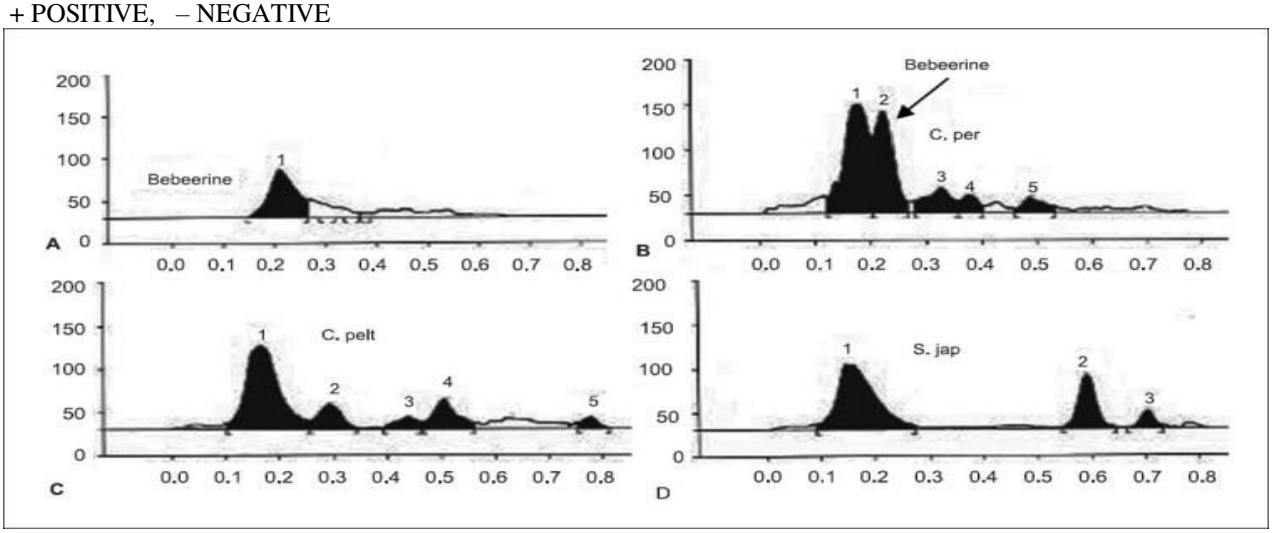

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FIG 3: HPLC AND GMC CHROMATGRAPH OF C.PARERIA AND A.CALMAUS

TABLE 2: A.CALAMUS AND C.PARERIA ON ATERIAL PRESSURE, HEART RATE, HEART WEIGHT, SKIN IN ISOPROTERENOL INDUCED AUX IN CARDIAC HYPERTROPHY

GROUP N.O	MAP (mmHg)	HR (bpm)	HW (G)	HW/BW ratio (mg/g)	GROUP NO.	MAP (mmHg)	HR (bpm)	HW(G)	HW/BW ratio(mg/g)
C	98.99	363	0798	3.31 /0.09	C	98.99	363	0798	3.31 /0.09
ISO	92.87	454	1.275	4.95/0.19	ISO	92.88	454	1.275	4.95/0.19
CIS50	98.85	371	0.895	3.47/0.14	ACO50	98.59	371	0.895	3.47/0.14
CIS 100	98.47	368	0.869	3.51/0.13	ACO100	78.47	368	0.866	3.51/0.13
CIS 200	97.68	367	0.874	3.59/0.11	ACO 200	97.75	367	0.874	3.59/0.11
AML	98.78	365	0.887	3.75/0.15	AML	98.78	365	0.888	3.75/0.15
CIS50+ISO	91.47	418	1.198	4.48/0.26	ACO50+ISO	93.45	418	1.198	4.48/0.26
CIS100+ISO	89.25	401	1.143	4.22/0.21	ACO100+ISO	89.25	401	1.183	4.22/0.21
CIS200+ISO	87.91	389	1.103	4.12/0.19	ACO 200+ISO	87.91	388	1.153	4.12/0.19
AML+ISO	88.04	385	1.050	4.04/0.18	AML+ISO	88.04	383	1.050	4.04/0.18

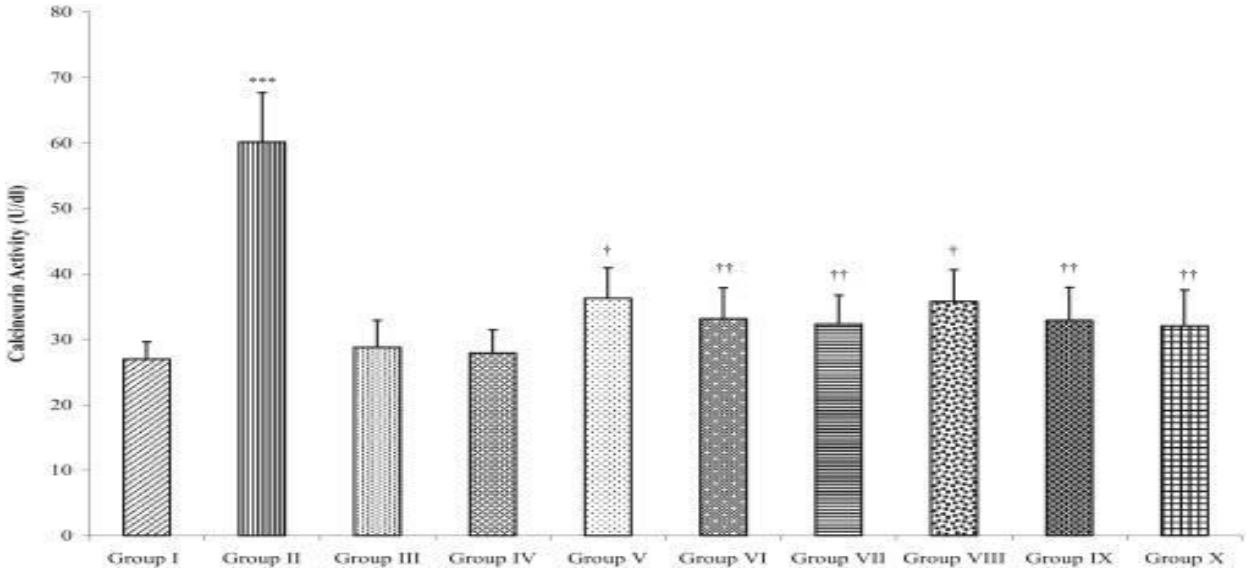

FIG4: EFEECT OF C. PARERIA ISOPROTERENOL INDUCED IN CARDAIC DISEASE

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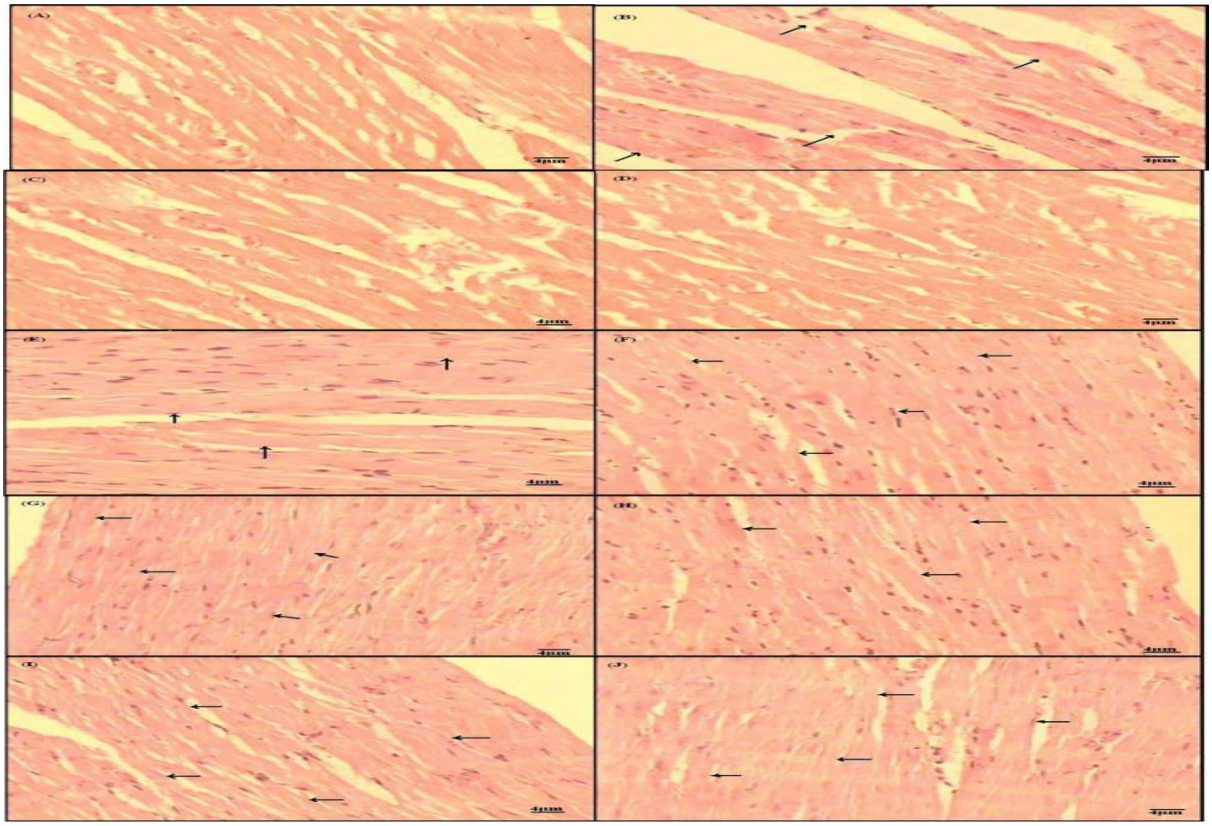

FIG5:LIGHT MICROGRAPH SHOWING C.PARERIA/ A. CALAMUS (200mg/kg/day),(9mg/kg/day),(100mg/kg/day) SHOWING NORMAL H& E EFFECT

TABLE 3: **: C.PARERIA AND A. CALAMUS ON LACTATE SERUM, GSH IN ISOPROTERENOL - INDUCED HYPERTROPHY**

GROUP	LDH	TBARS	GSH	GROUP	LDH	TBARS	GSH
C	345.28	6.78	2.76	C	345.28	6.97	2.76
ISO	558.80	8.95	3.69	ISO	558.80	8.95	3.69
CIS50	342.48	7.12	2.06	ACO50	342.48	7.12	2.06
CIS 100	365.78	7.10	2.87	ACO 100	365.78	7.10	2.87
CIS 200	370.64	7.15	3.98	ACO 200	370.64	7.15	3.92
AML	358.02	7.02	3.95	AML	364.02	7.02	3.95
CIS50+ISO	484.92	8.89	3.87	ACO50+ISO	484.92	8.89	3.87
CIS100+ISO	453.78	7.75	2.98	ACO100+ISO	453.78	7.75	309
CIS200+ISO	435.52	7.49	3.15	ACO200+ISO	440.52	7.49	3.14
AML+ISO	432.27	7.42	3.18	AML+ISO	430.27	7.42	3.18

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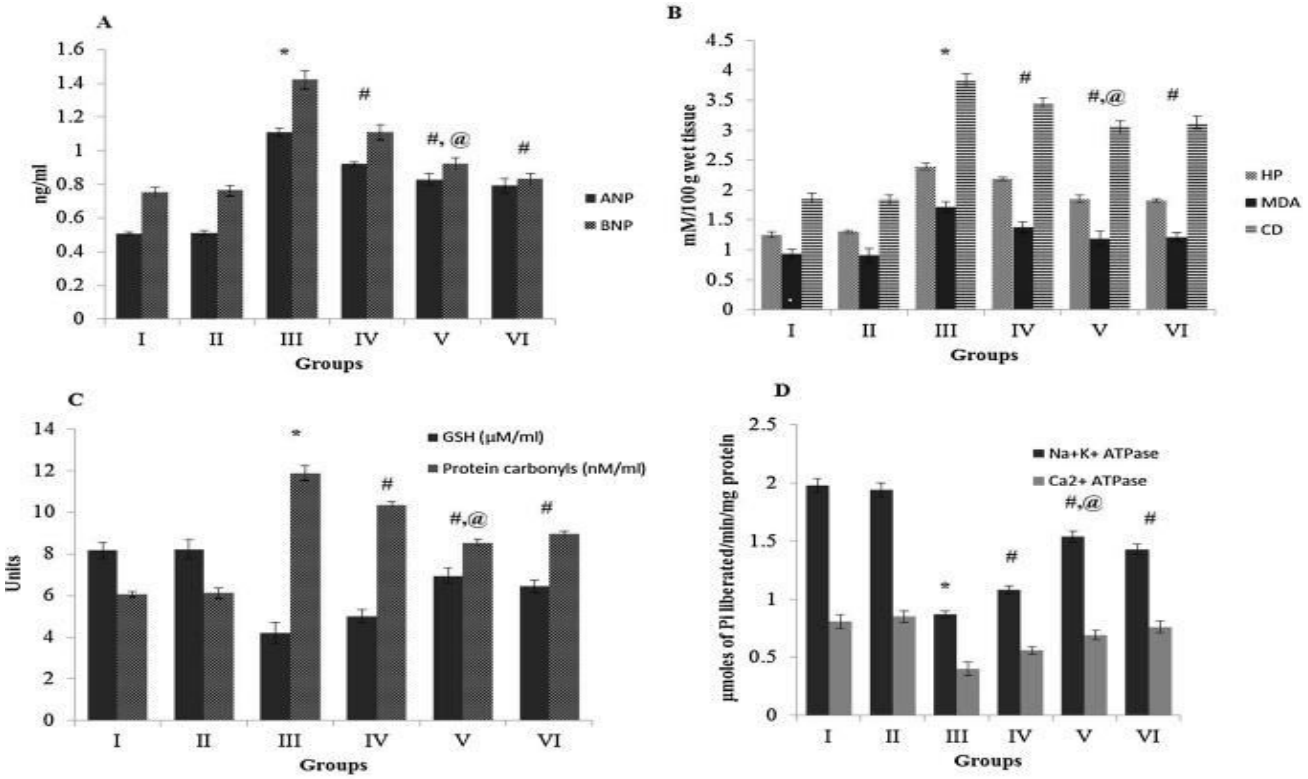

FIG 6: C.PARERIA AND A. CALAMUS ON – INDUCED LACTATE SERUM, GSH IN ISOPROTERENOL FOR HYPERTROPHY

TABLE 4: C.PARERIA AND A. CALAMUS ON MYOCARDIAL CATALYSE, GLUTATHIONE REDUCTOR IN INDUCED HYPERTROPHY SUPEROXIDE DISMUTASE.

GROUP	CAT	SOD	GPx	GR	GST	GROUP	CAT	SOD	GPx	GR	GST
C	34.18	55.04	74.48	41.58	159.89	C	34.18	55.04	74.48	41.58	159.89
ISO	16.72	30.89	34.87	43.69	94.78	ISO	16.72	30.89	34.87	43.69	94.78
CIS50	35.78	55.71	76.71	44.28	162..78	ACO50	35.78	55.71	76.71	48.28	162..78
CIS 100	36.45	57.26	77.15	45.84	164.75	ACO 100	36.45	57.26	77.15	45.84	164.75
CIS 200	37.15	58.96	78.60	42.78	167.28	ACO 200	37.15	58.96	78.60	42.78	167.28
AML	36.02	36.89	78.94	27.89	160.89	AML	36.02	36.89	78.94	27.89	165.89
CIS50+ISO	21.65	41.29	48.29	32.84	114.89	ACO50+ISO	21.65	41.29	48.29	28.84	114.89
CIS100+ISO	26.80	44.87	55.49	34.67	135.54	ACO100+ISO	26.80	44.87	55.49	34.67	135.54
CIS200+ISO	28.92	45.69	59.89	35.61	140.88	ACO200+ISO	28.92	44.69	59.89	35.61	138.88
AML+ISO	29.82	45.94	59.69	35.72	141.85	AML+ISO	29.82	45.94	59.69	35.72	141.85

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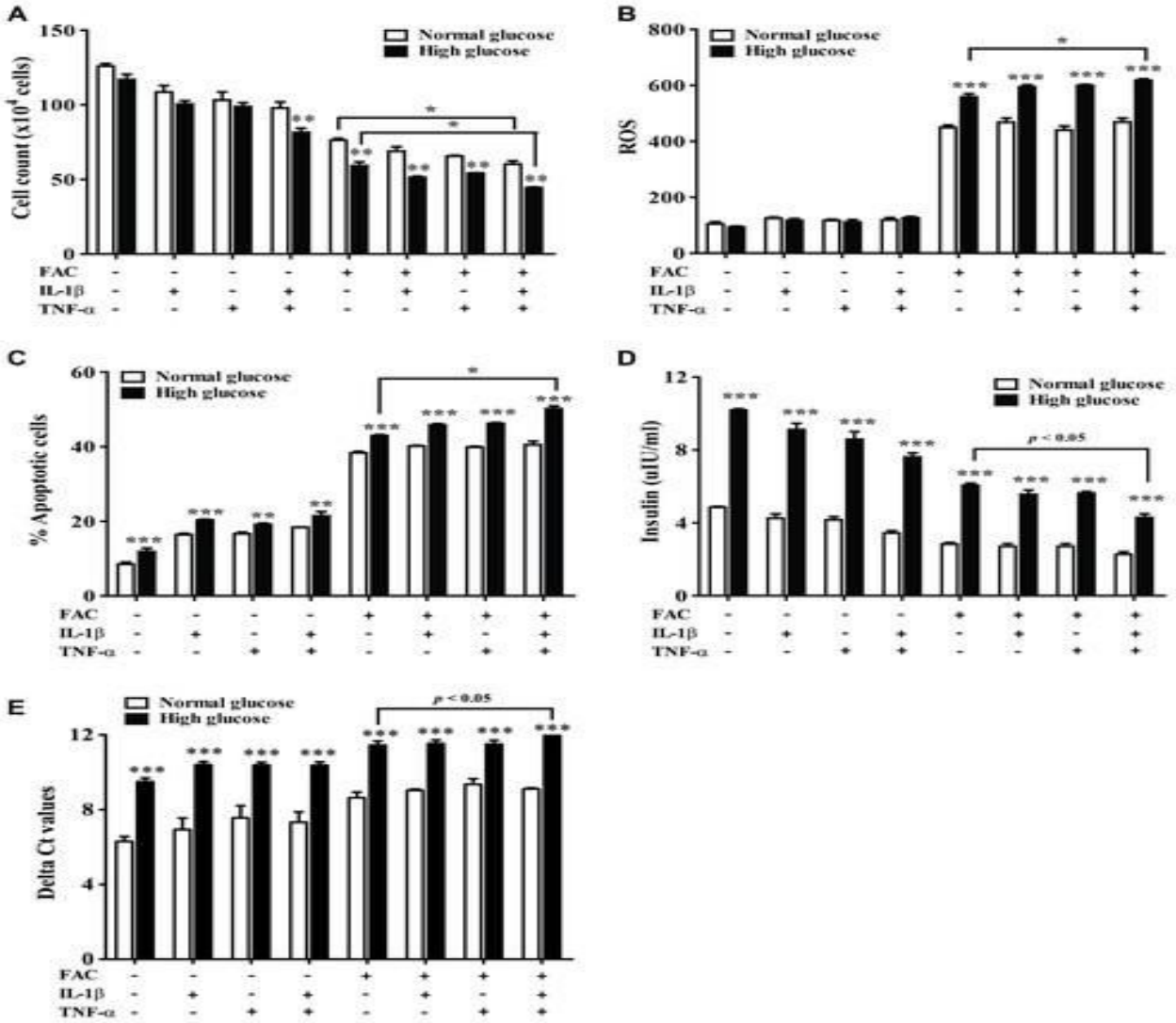

FIG7: C.PARERIA AND A. CALAMUS ON MYOCARDIAL CATALYSE, GLUTATHIONE REDUCTOR IN INDUCED HYPERTROPHY SUPEROXIDE DISMUTASE.

TABLE 5: C. PARERIA AND A.CALAMUS ATERIAL PRESSURE, HEART WEIGHT, BODY WEIGHT IN THYROXINE INDUCED IN CARDIAC HYPERTROPHY

GROUP	MAP mm Hg)	HR (bpm)	HW(G)	HW/BW ratio (mg/g)	GROUP	MAP (mmHg)	HR(bpm)	HW(G)	HW/BW Ratio (mg/g)
C	98.99	375	0798	3.31 /0.09	C	100.89	375	0.782	3.24 /0.09
T4	118.87	460	1.275	4.95/0.19	T4	118.79	460	1.275	4.95/0.19
CIS50	98.85	371	0.895	3.47/0.14	ACO50	98.59	372	0.880	3.35/0.14

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CIS 100	98.47	368	0.869	3.51/0.13	ACO100	78.47	368	0.866	3.51/0.13
CIS 200	97.68	367	0.874	3.55/0.11	ACO 200	97.75	367	0.874	3.59/0.11
AML	112.78	365	0.887	3.48/0.15	AML	98.78	369	0.888	3.75/0.15
CIS50+T4	108.47	418	1.198	4.48/0.26	ACO50+T4	98.45	427	1.198	4.48/0.26
CIS100+T4	89.25	401	1.143	4.16/0.21	ACO100 + T4	113.25	412	1.183	4.22/0.21
CIS200+T4	105.91	389	1.103	4.12/0.19	ACO 200+T4	109.91	398	1.153	4.12/0.19
AML+T4	104.54	385	1.050	4.04/0.18	AML+ T4	104.54	393	1.050	4.04/0.18

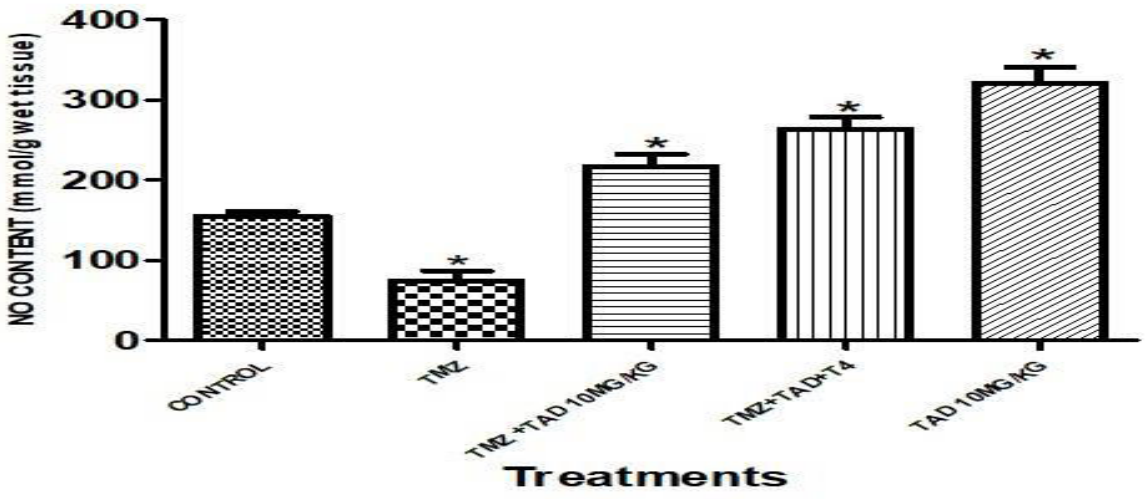

FIG 8: C. PARERIA AND A.CALAMUS ATERIAL PRESSURE, HEART WEIGHT, BODY WEIGHT IN THYROXINE INDUCED IN CARDIAC HYPERTROPHY

TABLE 6: C.PERERIA AND A. CALAMUS ON SERUM LACTATE TUBARS CARDIAC HYPERTROPHY, GSH IN THYROXINE

GROUP	LDH	TBARS	GSH	GROUP	LDH	TBARS	GSH
C	344.28	6.78	2.76	C	344.60	6.91	3.68
T4	528.80	8.95	3.69	T4	523.36	8.95	2.11
CIS50	342.48	7.12	2.11	ACO50	348.48	7.12	3.88
CIS 100	368.78	7.10	3.87	ACO 100	364.98	7.10	3.92
CIS 200	370.64	7.09	3.98	ACO 200	373.64	7.15	3.97
AML	358.02	7.02	3.95	AML	364.02	7.02	3.95
CIS50+T4	484.92	7.36	3.87	ACO50+T4	484.92	8.89	3.91
CIS100+T4	453.78	7.75	2.98	ACO100+T4	453.78	7.75	2.79

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CIS200+ T4	435.52	7.31	3.18	ACO200+ T4	440.52	7.49	3.23
AML+ T4	432.27	7.42	3.35	AML+ T4	430.27	7.42	3.32

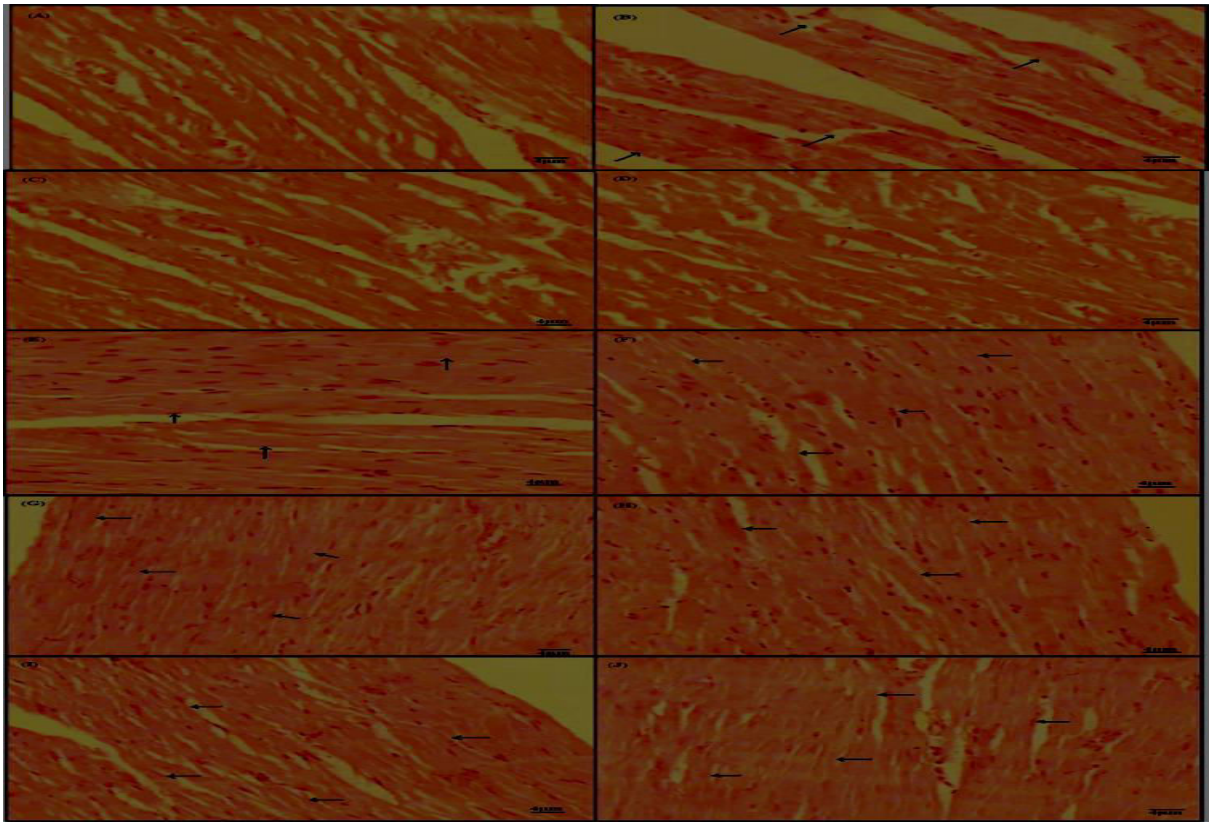

FIG9: C.PERERIA AND A. CALAMUS ON SERUM LACTATE TUBARS CARDIAC HYPERTROPHY, GSH IN THYROXINE

TABLE 7: C. PAPERIA AND A. CALAMUS ON MYOCARDIAL CATALYSE, DISMUTASE SUPEROXIDES, THYROXININ INDUCED HYPPERTROPHY GLUTATHION REDUTASE.

GROUP	CAT	SOD	GPx	GR	GST	GROUP	CAT	SOD	GPx	GR	GST
C	34.18	55.04	74.48	41.58	160.89	C	35.24	55.44	75.88	42.28	169.89
T4	16.72	30.89	34.87	43.69	102.35	T4	16.72	33.89	39.65	43.69	10.78
CIS50	35.78	55.71	76.71	48.28	162..78	ACO50	35.78	56.71	76.71	48.28	162..78
CIS 100	36.45	57.26	77.15	45.84	164.75	ACO 100	36.45	57.26	77.15	45.84	164.75
CIS 200	37.15	58.96	78.60	42.78	167.80	ACO 200	37.15	58.96	78.60	42.78	167.28
AML	36.02	36.89	78.90	37.89	165.89	AML	36.02	56.89	78.94	27.89	165.89
CIS 50+ T4	21.65	41.29	47.51	28.84	114.89	ACO50+ T4	21.65	38.29	48.29	28.84	118.89
CIS100+ T4	27.80	44.87	55.49	34.67	135.54	ACO100 + T4	27.80	44.87	55.49	34.67	135.54
CIS200+ T4	29.92	44.69	59.89	35.61	138.88	ACO200 + T4	28.89	44.69	59.89	35.61	144.88

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AML+ T4	30.82	45.94	59.69	35.72	141.85	AML+ T4	30.34	45.94	59.69	35.72	141.85

CONCULSION

Cissampelos pareira and Acorn calamus effect in cardiac hypertrophy induced by isoproterenol

Isoproterenol chronic administration (5 mg/lcg/day, 30 days), cardiac hypertrophy, cardiac weight ratio, angiotensin II, tumour factor necrosis, calcineurin, oxide/reactive nitrients, NaV K'^-ATPase, antioxidant and NaVK'^-ATPase, active component antioxidants Both of these changes in the therapy of Cissampelos pareira (100 and 200 mg/kg/day, 30 days) and Acorus calamus (100 and 200 mg/kg/day, 30 days) were substantially enhanced. Thus, the research provides experimental evidence that the cell membrane of the Cissampelos pareire and Acorus calamus is highly antioxidant; enhances activation of the system of renin-angiotensin, tumour necrosis, mthase and calcerin nitric oxygen expression; and increases the expression of the myocardial pump sodium. Furthermore, the cardiac rate can be normalized.

Effect of thyroxin-induced cardiac hypertrophy on Cissampelos pareira and Acorus calamus

The continuous thyroxine (0.1 mg/kg/day, for 30 days) was characterised by hypertropy of the heart and heart and body weight ratios, Angiotensin II, tumour necrosis factor, calcineurine, nitric oxide and thyrobarbituric acid, and a substantial decrease. Hypertrophy of the heart Cissampelos pareira (100 and 200 mg/kg/day) and Acorus calamus (100 and 200 mG/kg/day) have been decreased to almost normal in the next 30 days. We can thus deduce that Cissampelos pareira and Acorns calamus have a strong cardioprotective potential. This can be ascribed to enhanced sodium pumping expression in myocardial and antioxidant activity, and to a reduction in activation of reninangiotensin, a tumor-necrosis factor expression, and synthase and calcineurin inducible activity of nitric oxide. Furthermore, the chronotropic cardiac impact can be normalized.

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