Abstract---The main aim of this paper is different pharmacological activity of plant Euphorbia thymifolia L. belongs to family Euphorbiaceae. The herb used as traditional folk medicine and commonly known as laghududhi koir choti-dudhi. The plant is annual, small branch, pubescent and contains white milky latex. The plant used in various therapeutic activity by using different solvent like ethanol, methanol, water etc. shows antimicrobial, antifungal, antiasthamatic, anticancer, antidiarrheal, laxative, antioxidant, antiviral, antidiabetic etc. the other pharmacological activity mention in given review article.

Keywords---anti-inflammatory, antinociceptive, phytochemical.

Introduction

The ratio of population to drug are insufficiently, non-economic treatment and several side effects of modern system of medicine due to recurrent use of medicament increase the development of resistant, due to those effect the community turns to traditional system of medicine for wide variety of human ailments (1). The variety of medicinal activity observed in traditional system of medicine in Ayurveda used in various plants extract. Ayurveda is born in India, and its hub of medicine for ayurvedic treatment. In medicinal system, plant acts as most important role for human healthcare system until in future development. In recent technique, modern system of medicine uses the plant extract to improve the potency of drug with reducing the side effect in medication and prohibition in human disability. “Ayurveda is a traditional convenient treatment, which ranges
from ancient to modern objectives depending upon the type of disease to be cured” (2, 3). The same system of Ayurveda is used in India which is the largest producer of medicinal Herbs used in Ayurveda. (4). The medicinal plant has many bioactivities and therapeutic effects were studied so far. The plant found various medicinal properties, in traditional system of medicine used of plant parts and their extracts for cure the disease and disorder. On information available in various literature studies like phytochemical, pharmacological standards of extraction, isolation, phytochemical screening of active molecule pharmacological studies such as mode of action in-vitro and in-vivo study, formulation development, toxicity testing studies exploring so far. In nineteenth century phytochemical came to focus in treatment in various therapy. In 1940 to 2002, about 70 % of drugs are approved those drugs are partially based on natural product (5).

The Euphorbiaceae is large family of flowering plants, having spurge family. In Euphorbiaceae family consist of 300 genera and 7500 species, it should be identified by monocious herb, shrub, trees, succulent and cactus like and present latex inside the plant and stem (6). The highly reputed plant which are useful in many diseases are categorized under the genus euphorbia. This genus has diverse chemical entities with many structural variation sources. Such plants like Amla (Embelicaofficinalis), Arendmul (Racinuscommunis) Bhoiamli (Phyllanthusfractus), Caster (Ricinuscommunis Linn) etc. which can be used for the treatment of many chronic illnesses such as diabetes as ma'am liver diseases hyper inflammation etc. Therefore, for the same reason they are medicinal very valuable (7). Euphorbia thymifolia l is a small-branched green spine prostrate and Jewel hub also known as Laghududhika or Chhotidudhithat grows on grassland on in most Asian countries. (8). The part of Euphorbia thymifolia leaves, seeds used in Ayurveda to cure many remedies such as in worm case and in certain bowel affection of children also used as stimulant and laxative it is also used as many disorder due to present of many active constituent(9). Euphorbia thymifolia Linn is commonly called as different name shown below (10, 11).

- **Ayurveda** - Chhotidudhi, Laghudughikaa
- **Bengal** - Dudiya, shweetkeruee, swetkerua, inbodo- Nasraikorophisa
- **Ceylon** - Cgittirpalavi
- **English** - Chicken weed, dwarf spurge, red caustic creeper
- **Gujarat** - Nahaniudheli
- **Kannada** - bilechitraphala, naagaarjunii
- **Hindi** - Chhotidudhi
- **Marathi** - Ghakkidudhi, Chothadudhi
- **Sidha** - Ammanphtarisi
- **Sanskrit** - Laghududhika, Rakvatindachada
- **Spanish** - Golondrina
- **Unani** - Dudhikhurda
- **Tamil** - sittirappaladi
- **Telugu** - bidurunanabiyam, peddavari

In Euphorbiaceae a wide variety of chemical composition of active group studied which are poisonous but pharmacological active useful to cure disease(12).
Botanical profile of *Euphorbia thymifolia* Linn.

- **Kingdom:** Plantae.
- **Division:** Magnoliophyta.
- **Classis:** Rosopsida.
- **Ordor:** Euphorbiales.
- **Family:** Euphorbiaceae.
- **Genus:** Euphorbia L.
- **Species:** *Euphorbia thymifolia* L.

*Euphorbia thymifolia* annual soft prostate herb pubescent stems, hairy slender cylindrical shape having reddish pink colour it become dry produce grayish green colour of all parts of plant. Stem is 10-20 cm length and 1-3 mm diameter consist white latex. Leaves are opposite very small simple in structure with oblong shape 3-6 mm length and 2-5 mm width, rounded at apex, margin is rough towards apex crenulated, glabrous above very short petioles is 3-6 mm length and 2-4 mm in width appear greenish pink colour, Involucre axillary, solitary or 2-3 in an axil, campanulate, 0-8 mm long; stalk very short, capsule is 1.5 mm long pubescent, styles are short, seeds observe 125 mm long quadrangular, blunt at point with 5-6 transverse furrows, fruits are ovoid-globose, acutely 3-lobed (13, 14, 15, 16).

**Medicinal Uses**

The herb *Euphorbia thymifolia* L. used as various dedicated organ disease like ‘eye disorder, abdominal disorder like dysentery and inflammatory reaction like pain in breast’. “It is an effective drug for bronchial asthma. Juice of the plant is used for ringworm, diarrhea and dysentery; mixed with fresh goat milk is given to cure blood dysentery (17, 19). The leaves and seeds are antihelmintic, astringent, laxative and stimulant and given to children in bowel complaints. Root is used in amenorrhea. *Euphorbia thymifolia* L. The herb *Euphorbia thymifolia* L. is widely used in instillation against dysentery, diarrhea, enteritis and reproductive related diseases (15). New Matured plants of *Euphorbia thymifolia* L. squashed and applied on affected area it reduced pain and improve in healing of sprains. It was proven used in the treatment of constipation, helminthiasis, ringworm, leprosy and skin diseases etc. as antiviral and antimicrobial activity (18).

**Phytochemical studies**

The various metabolic activity against *Euphorbia thymifolia* L. extract active due to present of various phytoconstituent present in it line phenol, flavonoids, Terpenoids, and saponins, and minor trace in alkaloid observe in various extract may result to increase action potential against metabolic as well as bacterial action (37).

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Extract</th>
<th>Type of Active phytoconstituent observed</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aqueous extract</td>
<td>Alkanes, triterpenes, phytosterols, tannins, polyphenols, and flavonoids like quercetin, cymol,</td>
<td>Ashwani kumar (2017)</td>
</tr>
</tbody>
</table>
carvacrol, 2-sesquiterpenes, salicylic acid, etc., phytoconstituents. Furthermore, it contains steroids, terpenoids, triterpenes, glycosides, essential oils, minerals, large number of phenolics and polyphenols. Prashant Y. Mali (2013)

Chloroform soluble fraction

Cinnamic acid derivatives, thymofloinoates A and B also p-hydroxy cinnamic acid, 5-hydroxy-6,7,8,4’-tetramethoxy flavone and 5-hydroxy-3’,4’,6,7,8-pentamethoxy flavone have also been isolated for the first time from this species. Abdul Malik (2012)

Ethanol extract


70% Aqueous acetone extract

Terpenoids, alkaloids, and flavonoid glycosides were isolated from this plant, other species are isolated. Yong Zhao (2018)

Methanol extract

Flavan-3-ol isomers (compound I and II) catechin (2, 3-trans-3, 4-transflavan-3-ol) and compound as epicatechin (2, 3-cis-3, 4-transflavan-3-ol) epitaraxerol, 12-deoxyphorbol-13-dodecanoate-20-acetate, 24-methylene cycloartenol, 12-deoxy-4P-hydroxyphorbol-13-dodecanoate-20-acetate, 12-deoxyphorbol-13,20-diacetate, quercetin-3P-galactoside, 12-deoxy-4P-hydroxyphorbol-13-dodecanoate-20-acetate, n-hexacosanol, esters, n-alkanes and sterols. Randhir Singh (2016)

petroleum Ether extract


<table>
<thead>
<tr>
<th>Part of plant</th>
<th>Name of Phytoconstituent</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerial parts</td>
<td>Hexa-hydroxy-di-phenic acid; de-hydro-hexa-hydroxy-di-phenic acid, gallic acid Gallotannins; Iso-mallotinic acid and other hydrolysable tannins; ellagitannins; isomallotinic acid, valoneaic acid.</td>
<td>Hydrolysable tannin(67)</td>
</tr>
<tr>
<td></td>
<td>Beta-carotene, chlorophyll-a and b, vitamin-C, and tannins</td>
<td>Antioxidants (67)</td>
</tr>
<tr>
<td></td>
<td>Micro-minerals like Fe, Cu, Mn and Co &amp; Macro-minerals like Na, K, Ca, Li.</td>
<td>Minerals (67)</td>
</tr>
<tr>
<td></td>
<td>Crude protein, fat and fiber, tress in carbohydrate like starch, amylase, amylopectin, cellulose,</td>
<td>Nutrients (67)</td>
</tr>
</tbody>
</table>
Cymol, (-)-isopinocamphenol, limonene, 2,6,6-trimethyl-1-cyclohexane-1-carboxaldehyde, safranal, (E,E)2,4-decaadienal, A-caryophyllene caryophyllene oxide, phytol, 2-n-Pentylfuran, 1-pentanol, nonanal, 2,4-heptadienal, benzaldehyde, 2,3-heptadione, 1-pentanol, tetradecenoic acid, pentadecanoic acid, n-hexadecanoic acid.

Thymofolinoates A and B in addition, p-hydroxy cinnamic acid, 5-hydroxy-6,7,8,4′-tetramethoxy flavone and 5-hydroxy-3′,4′,6,7,8-pentamethoxy flavone


<table>
<thead>
<tr>
<th>Roots</th>
<th>Taraxerol, tirucallol and other sterols.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterols (50)</td>
<td></td>
</tr>
</tbody>
</table>

**Pharmacological studies**

**Antibacterial study**

The study investigated the antibacterial activity *Euphorbia thymifolia* Linn and *Cassia alata* Linn Species ethanolic extracts against *Staphylococcus aureus* and *Escherichia coli*, concentrations for antimicrobial assay using the Kirby Bauer method. *Euphorbia thymifolia* Linn exhibits antibacterial activity against *Staphylococcus aureus* and *Escherichia coli* with 16mm and 14mm in mean diameter of the zone of inhibition. The presence of phenolics in plants and some other bioactive components shows antibacterial properties(20). Fresh latex of *Euphorbia thymifolia* showed the diameter of the zone of inhibition of 20.37 mm against Bacillus pumilus, 22.82 mm against Staphylococcus aureus, 20.94 mm against Streptococcus pneumoniae, 23.74 mm against Escherichia coli, 18.82 mm against Citrobacter freundii and 18.32 mm against Klebsiella pneumoniae, while the diluted latex (1: 10) of the plants showed no antimicrobial response. *Euphorbia thymifolia* showed Microbes like *E. coli*, *K. pneumoniae*, *S. typhi*, *Proteus mirabilis*, *Shigella dysenteriae* found to show diminished development when rewarded with the concentrate of *Euphorbia thymifolia* L.(21).The Euphorbia thymifolia extract of petroleum ether, benzene, chloroform, ethanol 95% and purified water shows antibacterial activity against Staphylococcus aureus, Streptococcus pyogenes, Enterococcus faecalis, Propioni bacterium acnes, Klebsiella pneumoniae and Pseudomonas aeruginosa at 1000 μg/disc using disc diffusion method to optimize the most effective extract(22).By in-vitro studies ethyl Acetate extract of 0.4 mg per ml and chloroform extract of 0.7 mg per ml which are the extract from each Euphorbia thymifolia exhibit antibacterial properties against *Escherichia coli* and *Shigella flexneri* inhibited the growth of these micro-organism (23).Euphorbia Thymoflia L in rural area used as folk medicine treatment of various vaginal diseases occurs due to infectious bacterial...
disease. The presence of bio active chemical substance sterols, tannins, triterpenoids, phenol and flavonoid effective against bacteria such as “streptococcus pneumonia, Salmonella enteridis, Psueudomonas aeruginosa and Bacillus cereus some fungi like Candida albicans protozoa like Trichomonas vaginalis” (60)

Antifungal Study

Fungi are saprophytes and they are harmful as well as useful to humans. The hurtful impacts are for the most part like obliterating crops; causing sicknesses and so forth. These exercises of parasites like fungi ought to be brought down to have advantage for people. In this manner the plant separates like various extract are checked for their movement as hostile to antifungal. Ethanolic extract of E. thymifolia is found to have anti-fungal property to study the fungal strain of Candida albicans give positive result (24). The latex extract is effective against “Aspergillus niger, Trichoderma viride, Alternaria alternate, Fusarium moniliforme and Curvularia lunata” were found to show reduced activity (25). The Euphorbia thymifolia extract of chloroform, benzene, ethanol 95%, petroleum ether and purified water shows antifungal activity against Candida albicans, C. tropicalis, C. krusei, Crypto-occus-marinus, Microsporu-mgypseum, Trichophyton rubrum, Epidermophyton floccosum and Aspergillus niger at 1000 μg/disc using disc diffusion method to optimize the most effective extract (22).

Anti-Diarrheal and Laxative study

The laxative effect of the ethanolic extract significant dose dependent activity tested level of doses (200 and 400 mg/kg, p.o.). to produce similar effect was of the standard tested at 400mg/kg, p.o. dose level. Laxative activity, in a dose up to 8h of drug administration(26). The herb Euphorbia thymifolia l. recommended for treatment of diarrhea and dysentery, also reported the various pharmacological activity (27). In India, Dehradun district in Uttarakhand state, the Bhoxa community people use in patients suffering with diarrhea and dysentery of plant Euphorbia thymifolia L. as anti-diarrheal and anti-dysentery(28).

Diuretic study

The Diuretic property of Euphorbia thymifolia L. was studying in a dose-dependent method on Ethanol extract. (200 and 400mg/kg) or extract fractions (200mg/kg each), in normal saline, 5 hrs urine volume was measure. After observation significantly increased the urinary output and concentration electrolyte in urinary at a higher dose of (400mg/kg,p.o.). The ethanolic extract potentiated the diuretic activity (26).

The Anti-Inflammatory study

The Anti-inflammatory activity by carrageenan-induced rat paw edema method using ethanolic extract of dose 100mg/kg body weight, observe reduction of edema compared as standard drug indomethacin 10mg/kg, as conclude extract have potency of anti-inflammatory property. (29, 30).
**Anti-oxidant study**

Different antioxidant chemical such as chlorophyll-a and chlorophyll-b, β-carotene, vitamin C, tannins and phenolic substances are found to be present in the plant in ethanolic extract and this extract shows nitric oxide scavenging activity of *Euphorbia thymifolia*. was studied. (29, 31). The studies on the antioxidant properties of the *Euphorbia thymifolia* L. was performed using ethanolic extracts from the whole plant. It was assessed in both in-vivo and in-vitro trial models by evaluating the malondialdehyde substance of rodent like ‘Rat brain, which is one of the results of the lipid peroxidation’. The aftereffect of the investigation demonstrated critical hindrance of lipid peroxidation level practically identical to that of nutrient as Vitamin- E as standard (32,36). In Euphorbia thymifolia tannin, make a effective for potent and stable antioxidant. (21). The *Euphorbia thymifolia* linn. Shows potent antioxidant activity in Phosphomolybdenum method as compare H2O2-Scavenging Method and reducing power method by using methanolic extract(33). The antioxidant and antiviral activities for the extract of different fractions of Euphorbia thymifolia L. ethanol, methanol, chloroform, n-butanol and water were investigated anti-lipid formation, anti-superoxide formation and free radical scavenging assays for all fractions, were studied Electron spin resonance showed that water extract and pure compounds of *E. thymifolia* expresses hydroxyl radical scavenging and superoxide radical properties (34, 35).

**Antidiabetic hypoglycemic study**

Aerial parts *Euphorbia thymifolia* aqueous and methanol extract dose (250 and 500 mg/kg, p.o., respectively) for 28 days was investigate the hypoglycemic and hypolipidemic effect in streptozotocin-nicotinamide (STZ-NA) induced diabetic rats. The normal liver function shows the level of restoration of the liver enzymes. The different parts of Euphorbia thymifolia as folk claim on this basis studied on diabetic animal, the Euphorbia thymifolia extract studied on histopathological studied, pancreas appears as normal. (37). The study evaluates molecular interactions between various bioactive compounds in ethanolic extract of *Euphorbia thymifolia* and targeted proteins related to Type 2 DM. This procedure includes the molecule decrease 3D structures of those bioactive mixes of chemical group into four focused on

- Proteins: 11-β hydroxysteroid dehydrogenase type 1
- Protein-tyrosine phosphatase 1B
- Amido-transferase
- Mono-ADP-ribosyl transferase sirtuin
- Glutamine: fructose-6-phosphate.

Ligand Scout was applied to assess the bonds framed between twenty ligands and the coupling destinations of each focused on protein. The outcomes recognized seven bioactive chemical molecules with high restricting fondness (<8.0 kcal/mol) to every one of the 4 focused on proteins including “β-amyrine, taraxerol, 1-O-galloyl-β-d-glucose, corilagin, cosmosin, quercetin-3-galactoside and quercitrin” (38). Antihyperglycemic activity was study by oral glucose tolerance test. Mice were given different dosages of extract concentrate, trailed by glucose (2 g/kg
body weight) 1 h after frequency of the dose extract. The evaluation of the serum glucose level was done after two hours of the glucose administration. The extract induced a enormous dose dependent reduction into serum glucose level within test mice, then ‘administered at dose concerning 25,100,200 and 400mg/kg body weight as much compared according to monitoring control animal’. The highest reduction concerning serum glucose (60.5%) used to be executed at a dose concerning 400 mg/kg. permanency. “In evaluation together with a par anti-hyperglycemic medicine of ‘glibenclamide’, now administered at a dose about 10 mg/kg body weight , diminished serum glucose ranges by means of 48.6 % .Glucose-loaded mice were used for the study of ‘Antihyperglycemic properties of Euphorbia thymifolia by oral glucose tolerance tests”. ‘Antihyperglycemic and Antinoceptive activities’ of Euphorbia thymifolia methanolic extract followed by glucose of dose 2 g/kg body weight given after one hours interval observed the blood serum glucose level of mice (39,59). Euphorbia thymifolia used as folk medicine in Bangladesh as an Antidiabetic and castigation permanency (40).

**Antiurolithiatic study**

The alcoholic and hydro-alcoholic extracts of E. thymifolia L. plant dose of (5 mg/ml-5 ml) cystone (5 mg/ml-5 ml) on size and dissolution of calcium oxalate crystals which result of inhibited the precipitation of calcium and oxalate. The results of our study clearly showed the utility of E. thymifolia L. plant for the treatment of renal calculi shows anti-urolithiatic activity (41).

**Anthelmintic study**

The presence of tannin in ethanol extract shows anti-helminthic activity by paralyzing the worms The ethanol extract showed more significant effect on paralyzing the worms as compare the aqueous extract. Different concentrations were tested against albendazole was included as reference (31). Three different concentrations, each of crude alcoholic and aqueous extract (10, 50,100 mg/ml in distilled water) Piperazine citrate (10mg/ml) was included as reference compound. The leaf extract of Euphorbia thymifolia l. not only paralysis, but also caused death of worms at 100 mg/ml concentration of in shorter time as compared to reference drug Piperazine citrate (42). The significant Anthelmintic activity of Euphorbia thymifolia aqueous and methanolic extracts using different concentration against Phereetima posthyma and Ascaridia galli (43).

**Anti-asthmatic study**

It is observed that for the treatment of bronchial asthma, E. thymifolia is observed to be very useful. For estimation and treatment used separate water soluble fraction from alcohol extract used for identification of efficacy. The admission of dose medication helps in the unwinding of smooth muscles relaxes in bronchial asthma. This causes the asthma patient to assuage from the manifestations of asthma as it relaxes up the muscles (44). Antiasthmatic activity of methanol (ETM) and aqueous (ETW) extracts of ET was administered to the rats in dose of 250 and 500 mg/kg orally for 14 days. Anaphylaxis was induced by administration of horse serum and triple antigen vaccine intraperitoneal (i.p.) in albino Wistar rats. The rats were administered the extract of Euphorbia thymifolia
Linn in doses of 250 and 500 mg/kg orally for 14 days. In treatment of asthma different parameter was calculated containing IgE were estimated, total WBC count and differential count (45).

**Hepatoprotective study**

The Euphorbia thymifolia 70 % ethanolic extract was determined the hepatoprotective activity by hepato-toxin use as Carbon tetrachloride (CCl4) which damages the hepatocytes. When ethanolic extract given orally shown the hepatoprotective activity. 100mg/kg p.o. Silymarin used as reference standard and it showed effect in hepatotoxicity models. The dose dependent significant reduction in biochemical levels in case of CCl4 induced hepatotoxicity models (30, 46).

**Anti Stress study**

The study also shows that female reproductive dysfunction which is induced by stress could be treated by the aqueous extract of *Euphorbia thymifolia* L. roots, which has anti-stress properties. Forced swimming stress activity for 15 min per 28 days and resistant stress for 180 min per 28 days in two doses, 100 mg/kg and 200 mg/kg for 28 days observe changes in organs weight and estrous cycle. The results were analyzed by using one-way ANOVA and significant protective effect which is evident by decrease in the duration of proestrous and increase in duration of estrous, metestrus, and diestrus phases. The anti-stress activity may be due to the presence of various phytochemical constituents like alkaloids, flavonoids and other constituents present in the Euphorbia thymifolia root (47, 58). The *Euphorbia thymifolia* L. ethanolic root extract improves the stress level by maintain the disturb level of luteinizing hormone, follicle-stimulating hormone, estradiol, progesterone and prolactin which observe the improvement in the reproductive system in female rats (48).

**Anti-Arthritic study**

The *Euphorbia thymifolia* Linn reported the anti-rheumatoid arthritis by using Petroleum ether (40-60°C), Chloroform, Alcohol, Aqueous extract. The in vivo method estimate the anti-arthritic activity using Freund’s adjuvant arthritis in albino rats The hemoglobin content, “total WBC count, Differential WBC check, ESR, RBC, SGOT, SGPT, ALP, TP, Lipid peroxidation in liver and impact of gastric mucosa” were additionally evaluated (49,50). The aqueous extracts of *Euphorbia thymifolia* where induced in albino rats to study anti-arthritic activity measured by Freund’s adjuvant. When the aqueous extract from *Euphorbia thymifolia* l. was studied, it was recorded that the different constituent of blood measure and estimate indicated the anti-arthritic property. (51). The methanol and aqueous extract of *Euphorbia thymifolia* effectively used on treatment in Anti-anaphylactic and antiasthmatic activity by induced horse serum and triple antigen vaccine by intra peritonieal in albino rats in dose of 250 and 500mg/kg orally for 14 days, at the end Asthma measure with other blood parameter, as per report the *Euphorbia thymifolia* shows both anaphylaxis and anti-asthmatic activity was studied(45).
**Antiviral study**

The methanol, chloroform, ethyl acetate, n-butanol and water of *Euphorbia thymifolia* using fractions of 3-O-galloyl-4,6-(S)-HHDP-D-glucose and ethyl acetate used to study of anti-herpes simplex virus type-2 (HSV-2). Acyclovir used as positive control and checked the IC50 values in XTT and plaque reduction assays for 3-O-galloyl-4,6-(S)-HHDP-D-glucose were 4.75 B 0.46 and 3.51 B 0.44 mg/ml, whereas for ethyl alcohol fractions they were 7.72 B 0.15 and 7.42 B 1.63 mg/ml, respectively. Shows the fractions are effectively work against herpes simplex virus type-2 (HSV-2). The ethyl acetate *Euphorbia thymifolia* ‘extract observe virucidal ability affected by incubation period but not on incubation temperature’. The effects of incubation time and temperature were negligible for action of 3OG46HG against HSV-2 (34, 53).

**Larvicidal study**

Larvicidal activity of some medicinal plant studies in comparison by using hexane, ethyl acetate, petroleum ether, acetone and methanol extracts of some plants Abutilon indicum, Aegle marmelos, Euphorbia thymifolia, Jatropha gossypifolia and Solanum torvum and study the toxicity test on early fourth-instar larvae of Culex quinquefasciatus. All extract observed little larvicidal activity, the report to observe after 24 hrs. (54).

**Antitumor study**

The ethanol extract of *Euphorbia thymifolia* L. is an effective anti-oxidant and anti-tumor activity against Ehrlich as cites carcinoma tumor in mice administrate oral dose of 200mg/kg prolongs the life span of Ehrlich ascites carcinoma-tumor bearing mice and causes significant increase in number of peritoneal cell count and significant decrease in volume of solid tumor mass compared to Ehrlich as cites carcinoma bearing control animals (55).

**Anti-Spasmodic study**

The ethanol concentrate of *Euphorbia thymifolia* L. is found to have against uncontrollable muscle movement used as “antispasmodic action, which mitigates the spasm” and its occurrence. It was observed during the studies that the extract taken from *Euphorbia thymifolia* L. could inhibit the growth of unicellular protozoan parasite named *Plasmodium falciparum* (19, 56).

**Neurological study**

The Neurological Activity study on behavioral dysfunction of “neurochemical abnormality and oxidative stress in mice brain on rotenone induced PD model”. In the group of animal dose of ‘Euphorbia Thymifolia 1, 75 mg/kg (P < 0.01-0.001)’ treated group of animal observe “the significant reversal of body weight loss, locomotor score, rota rod muscle grip and rearing behavior induced by rotenone”. *Euphorbia thymifolia* total sterol has significantly (P < 0.001) reversed the increased lipid peroxidation and declined glutathione and nitric oxide scavenging
ability, so it protects the degeneration of dopaminergic neurons and improved the neurobehavioral, oxidative and neurochemical parameters. (61)

**Toxicity studies**

The presence of phytosterol as safe on acute toxicity study observe in the plant *Euphorbia thymifolia*, in nootropic activity and acute toxicity of *Euphorbia thymifolia* using dose 283.00 mg/kg (i.p) and the dose range of 25, 50 and 75 mg/kg were all the animals observed for long term toxicity up to 14 days and found on mice LD50 (57).

**Conclusion**

In this systematic review, “the phytochemistry, hostile anti-microbcial activity, anti-spasmodic activity, role in improving reproductive dysfunction, anti-hyperglycemic activity, hepatoprotective activity, anti-bronchial asthmatic activity, anti-arthritis activity, anti-diarrheal and anti-dysenteric activity, anti-inflammatory activity, diuretic activity, anti-oxidant activity, anti-stress activity, anti-helminthic activity was examined and discussed”. Only few bioactive compounds and its derivative of plant *Euphorbia thymifolia* are used to cure illnesses, but further study on the medicinal properties of this plant will help in producing drugs that are more useful.

**Conflict of interest**

Author declares that there is no any conflict of interest.

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