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Review On 'Tridax Procumbens' (*Asteraceae)* And Its Pharmacological Activity

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Abstract: Tridax Procumbens is common medicinal herb commonly known as Coat Buttons or Mexican daisy. This herbaceous plant, belonging to the *Asteraceae* family, it is native to the Americas but has spread to various parts of the world. This plant majorly used for the medicinal used they are tradinal medicines of Indian.

The Tridax Procumbens are the species of flowering plant. The plant shown various pharmacologic activity like antibacterial, antidiabetic, anticancer, antiparkinsons, antarthritic, hypotensive, anti-inflammatory, immunomodulatory, ant obesity, wound healing, analgesic, antifungal, antiarthritic, antihyperglycemic hepatoprotective, anti-helminthic, anticonvulsant and antioxidant. The leaf extract of Tridax Procumbens. Leaf powder of ethanol was used in this study. The leaf extraction was tested for the presence of tannin, saponins, terpenoids, flavonoids, glycosides, alkaloids, protein. This review provides information on the traditional use and pharmacological actions.

Index Terms – Tridax Procumbens, antibacterial, antidiabetic, anticancer, antiparkinsons, antarthritic, antiulcer, hypotensive, anti-inflammatory, immunomodulatory, ant obesity, antimalarial, antidiarrheal, wound healing, analgesic, hepatoprotective and antioxidant, tannin, saponins, terpenoids, flavonoids, glycosides, alkaloids, protein.

1.INTRODUCTION

Tridax procumbens, commonly known as coat buttons or Mexican daisy, is a small flowering plant belonging to the *Asteraceae* family. perennial plant is often found in open areas, grasslands, and disturbed habitats. Tridax procumbens is notable for its daisy-like flowers and distinctive growth habit [1]

Fig.1: Tridax Procumbence Plant

Tridax procumbens has opposite leaves with serrated edges and a low, spreading growth habit. The plant produces flattened achenes with a pappus for wind dissemination, and its tiny yellow or white flowers are grouped in clusters. It has been brought to various regions of the world and is frequently found in a range of habitats, including as disturbed areas, roadsides, and grasslands.

The plant has a long history of traditional uses in various cultures. In traditional medicine, different parts of Tridax procumbens, including the leaves and flowers, have been utilized for their potential medicinal properties. The plant is believed to possess antimicrobial, anti-inflammatory, and wound-healing properties, and has been used to treat various ailments such as skin conditions, digestive issues, and respiratory problems. [2]

1.1Traditional Uses:

Tridax procumbens has been used in traditional medicine in various cultures. It is believed to possess medicinal properties and has been used to treat ailments such as skin infections, Antihypertensive, Anticancer, Antimicrobial, Antioxidant Anti-inflammatory, Anti-fungal, Anti hyperglycaemic, However, scientific research on its medicinal efficacy is limited, and caution should be exercised when using it for medicinal purposes. [3]

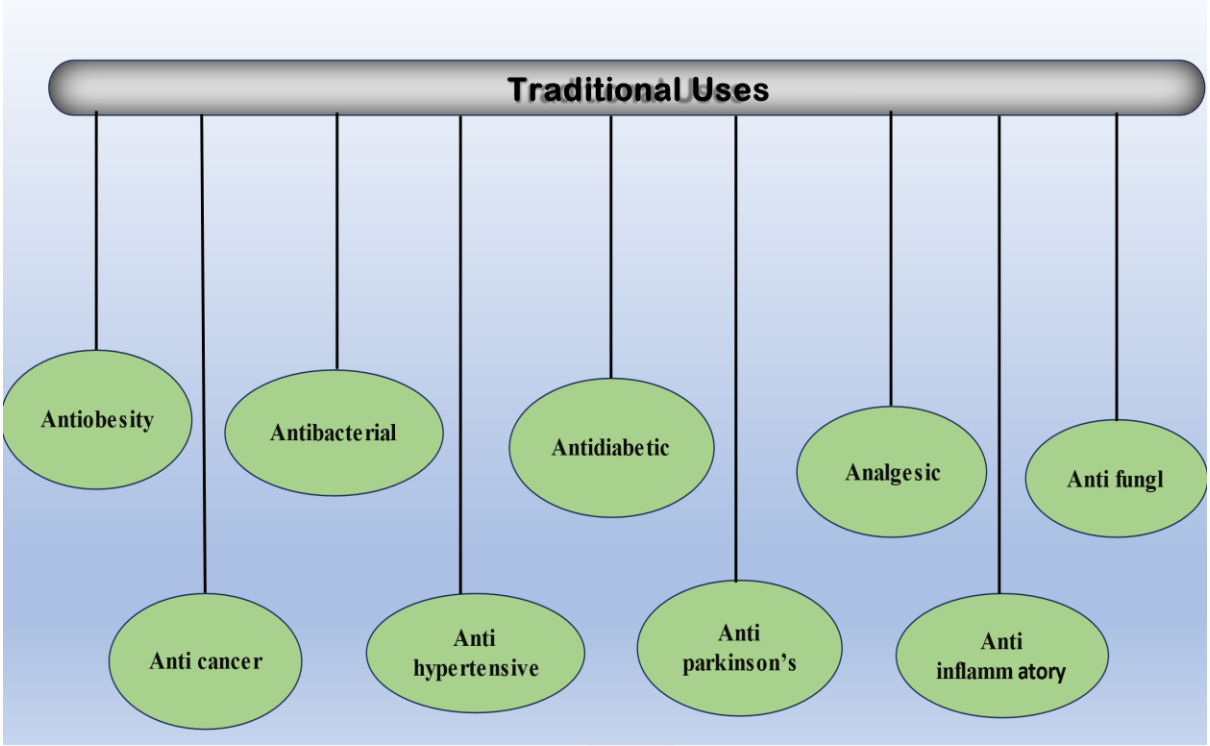

Table: 1 Traditional Uses

1.2Key Features of Tridax procumbens:

Ecological Role: Despite being considered a weed in some areas, Tridax procumbens can play a role in ecosystems by providing habitat and food for pollinators and other insects.

Invasive Potential: Tridax procumbens has shown invasive tendencies in regions where it has been introduced outside of its native range. Its ability to rapidly spread and outcompete native vegetation can lead to ecological imbalances.

Cultural Significance: In some cultures, Tridax procumbens has symbolic and cultural significance. For example, it might be used in religious ceremonies or traditional practices. [4]

2.BOTANICAL DESCRIPTION OF TRIDAX PROCUBENCS

2.2Scientific classification [5]

Kingdom	Plantae
Phylum/ Division	Magnoliophyte
Class	Eudicots
Order	Asterales
Family	*Asterales*
Genus	Tridax
Species	Tridax Procumbens
Common Name	Coat button
Status	Exotic/cultivated

Table: 1 Scientific classification

2.3Synonyms [6]

- Chrysanthemum Procumbens
- Balbisia Canescens
- Balbisia divaricate
- Balbisia Peducutate
- Tridax Procumbences

2.3 Vernacular Name [7]

Common Name	Language
Coat buttons and Tridax	English
Ghamara	Hindi
Jayanti Veda	Sanskrit
Dagadi pala	Marathi
Thatapoodu	Telugu
Chiravanak	Malayalam

Table: 2 Vernacular Name

2.4Physical Characteristics:

Leaves: The leaves of Tridax procumbens are simple, toothed, and arranged in a rosette at the base of the plant. They are often lobed or divided, giving the plant a unique appearance.

Flowers: The flowers are the most distinctive feature of Tridax procumbens. They resemble daisies, with a yellow central dis surrounded by white, yellow, or pink ray florets. The flowers are typically small and numerous, forming clusters at the tips of the branches.

Stems: The stems of the plant are prostrate or trailing, often reaching up to 50 cm in length. They can root at nodes, allowing the plant to spread and form dense mats.

Fruits and Seeds: After pollination, the disc florets produce small, cylindrical fruits called achenes. Each achene contains a single seed and is topped with a tuft of white bristles called pappus. This pappus aids in wind dispersal of the seeds.[6]


Leaves


Flowers


Stems


Fruits and Seeds

2.5Biology:

Habitat: Tridax procumbens is a common weed found in tropical and subtropical regions. It often grows in disturbed areas, agricultural fields, roadsides, and waste places.

Growth Form: It is an herbaceous plant that typically grows as a low-lying, prostrate or semi-erect herb.

Reproduction: Tridax procumbens reproduces through both seeds and vegetative means. It produces numerous small seeds with feathery structures that aid in wind dispersal.

Ecological Impact: Tridax procumbens can be invasive and negatively impact native vegetation due to its rapid growth and ability to form dense stands.

Description: Tridax procumbens is a small, herbaceous annual or perennial plant. It has a prostrate growth habit, with stems that can spread along the ground and root at the nodes. The leaves are simple, oppositely arranged, and serrated, with three prominent veins radiating from the base.

Ecological Impact: Tridax procumbens has become an invasive species in many parts of the world due to its ability to rapidly spread and colonize disturbed areas. Its growth can outcompete native vegetation, leading to changes in local ecosystems.[8]

3.MATERIALS AND METHODS

3.1Sample Collection and Preparation:

The leaves of Tridax Procumbens were obtained from Satana, Nashik, Maharashtra, India. The leaf and flower parts of Tridax Procumbens used to the identified of the plant. The leaves are dried in Hot air oven at 50°c. The dried leaves were ground using the (Mortal Pestle) to the fine powder. The powder was stored in a clean Polythene Bag. [10]

3.2Ethanol Extractions:

Ten grams (10g) of powdered sample was weighed and dissolved and 20ml of 100% ethanol of in a sterile conical flask. It was the mixed thoroughly and was left to stand for 24h. After 24h the mixture was filtered Using Whatman filter paper. The filtrate used Maceration method in 24hr. The concentrate was than collected in a sterile glass beaker and used for analysis. [10]

4.Phytochemical Test

Phytochemical tests are commonly used to identify the presence of specific chemical compounds in plant extracts. These tests often involve the use of specific reagents and chemical reactions to produce characteristic colour changes or precipitates that indicate the

presence of particular phytochemical compounds. Some common phytochemical tests include tests for alkaloids, tannins, saponins, flavonoids, and glycosides, Terpenoids, protein.

4.1 Observation table

Test	Observation	Inference
Tannins	Brownish green form	+
Saponins	Foam are form	+
Glycosides	Brown ring	+
Alkaloids	Orange red coloration	+
Terpenoids	Form a layer reddish brown	+
Flavonoids	Yellow coloration	+
Protein	White coloration	+

KEY: + Prese

Table: 3 Observation table

5.PHARMACOLOGICAL ACTIVITY

5.1Antihypertension:

Tridax procumbens is one such plant that has been investigated for its possible ability to lower blood pressure.

Tridax procumbens may be attributed to certain bioactive compounds found in the plant, such as flavonoids phytochemicals. These compounds have been studied for their ability to relax blood vessels, which can lead to a decrease in blood pressure [3,11,12]

5.2Antioxidant:

Tridax procumbens that help protect cells from damage caused by oxidative stress, which is a process linked to various chronic diseases and aging. They work by neutralizing harmful molecules called free radicals, which can cause cellular damage and contribute to the development of various health issues.

They contain various bioactive compounds that exhibit antioxidant properties, including flavonoids. [11,12,13,14,15]

5.3Anti-inflammatory:

Tridax procumbens or any herbal remedy for its anti-inflammatory properties, it's important to consult with a healthcare professional before doing so. They can provide you with guidance on its safety, potential interactions with medications you might be taking, and

whether there are more established treatments available for your specific condition. Always prioritize evidence-based approaches to healthcare. [15,16]

5.5Antifungal:

Tridax procumbens for treating fungal infections have not been thoroughly established. If you are considering using Tridax procumbens or its extracts for any medical purpose, it is advisable to consult with a healthcare professional for guidance and consider using it as a complementary approach alongside conventional antifungal treatments.

Tridax procumbens contains various phytochemicals, including flavonoids, alkaloids, tannins, saponins, and terpenoids. Some of these compounds are believed to contribute to its medicinal properties, including its antifungal activity. [17,18]

5.6Antibacterial:

Tridax procumbens extracts possess broad-spectrum antibacterial activity, meaning they can inhibit the growth or kill a wide range of both Gram-positive and Gram-negative bacteria. This includes pathogenic bacteria responsible for various infections.

• Some potential mechanisms by which Tridax procumbens might have antidiabetic properties include:

• Insulin Secretion: Some studies suggest that Tridax procumbens may help stimulate insulin secretion from the pancreatic beta cells. Insulin is a hormone that helps regulate blood sugar levels.

• Glucose Uptake: It is possible that compounds in Tridax procumbens may enhance the uptake of glucose by cells, helping to lower blood sugar levels.

The antimicrobial activity of Tridax procumbens is attributed to the presence of bioactive compounds, including flavonoids, alkaloids, tannins. [11,19]

5.7Antiarthritic:

Tridax procumbens is its antiarthritic potential. The plant contains various bioactive compounds like flavonoids, alkaloids, tannins, these properties could be beneficial in the management of arthritis [20,21]

5.8Anticancer:

Tridax procumbens, including its possible anti-cancer properties. However, it's important to note that while there have been studies suggesting potential anti-cancer properties.

Here are a few studies and findings related to Tridax procumbens and its potential anti-cancer properties:

•Apoptosis Induction: Apoptosis is a natural process in which damaged or abnormal cells self-destruct. Some studies suggest that Tridax procumbens extracts may induce apoptosis in cancer cells, which could be beneficial in preventing the spread of cancer.

•Inhibition of Angiogenesis: Angiogenesis is the process of new blood vessel formation, which is crucial for the growth and spread of tumours. Some research has suggested that Tridax procumbens may have anti-angiogenic properties, potentially limiting the blood supply to tumours. [22]

5.9Antihyperglycemic:

Tridax procumbens may be attributed to various bioactive compounds present in the plant, such as flavonoids, alkaloids, and tannins. These compounds may play a role in regulating blood sugar levels.[23]

5.10Antiparkinsonian:

Tridax procumbens has not been widely studied as a specific treatment for Parkinson's disease, and there is no well-established pharmacological activity associated with it in the context of this condition. While its antioxidant and anti-inflammatory properties may have potential benefits for neuroprotection, it is essential to consult with a healthcare professional or neurologist before considering any herbal or alternative treatments for Parkinson's disease. The standard treatment for Parkinson's disease is based on well-researched pharmaceutical interventions. [24,25]

5.11Antidiabetic:

Tridax procumbens may be attributed to the presence of bioactive compounds like flavonoids, alkaloids compounds. These compounds have been reported to have various biological activities, Tridax procumbens diabetes management. [12,13,26]

5.12Antiobesity:

Tridax procumbens may be attributed to its various bioactive compounds, including flavonoids, alkaloids, and terpenoids. These compounds have been studied for their potential effects on metabolic processes and appetite regulation.

Tridax procumbens extracts on body weight and related parameters in animal models. These studies have shown promising results, suggesting that certain compounds in the plant may influence factors involved in obesity, such as lipid metabolism and appetite regulation. [28,29]

5.13Analgesic:

The analgesic activity of Tridax procumbens is attributed to the presence of various bioactive compounds, including flavonoids, alkaloids, tannins, and saponins. These compounds can interact with the body's pain perception pathways, potentially reducing pain sensation.

Tridax procumbens has been studied for its potential analgesic effects. The plant contains various phytochemicals, including flavonoids, alkaloids, and terpenoids, which are believed to contribute to its medicinal properties. The exact mechanism of Tridax procumbens' analgesic action is not entirely clear. However, it is thought to involve the modulation of pain pathways, possibly through interactions with pain receptors or inflammatory processes. [27,28]

5.14Wound Healing Properties:

Some research suggests that Tridax procumbens extracts may aid in wound healing. This could be due to its anti-inflammatory and antimicrobial properties. Traditionally, Tridax procumbens has been used topically to promote wound healing. Some studies have suggested that the plant may enhance the healing process and reduce the risk of infection. Traditional use of Tridax procumbens includes its application on wounds and injuries. This suggests that it may have properties that promote wound healing, possibly due to its anti-inflammatory and antimicrobial effects. [30]

5.15Hepatoprotective Activity:

Tridax procumbens has shown potential in protecting the liver from damage caused by toxins or other harmful agents.[31]

5.16Immunomodulatory Activity:

There is some evidence to suggest that Tridax procumbens may have an impact on the immune system, although more research is needed to understand the extent of this activity. It has been suggested that Tridax procumbens may have effects on the immune system, potentially modulating immune responses. [30,31]

5.17Anti-helminthic:

Some studies have reported anthelmintic activity, indicating that extracts of Tridax procumbens may have properties that are effective against certain parasitic worms. [25,31]

5.18Anticonvulsant Activity:

There is limited research suggesting that Tridax procumbens may have anticonvulsant properties, indicating a potential role in the management of seizures. [27,32]

6.CONCLUSION:

Tridax procumbens is a plant with a mix of potential benefits and drawbacks. The phytochemical screening of Tridax procumbens suggests that the plant contains a range of bioactive compounds such as alkaloids, flavonoids, tannins, saponins, terpenoids, glycosides, protein, these compounds have been associated with various medicinal properties, including like antibacterial, antidiabetic, anticancer, antiparkinsons, antarthritic, hypotensive, anti-inflammatory, immunomodulatory, ant obesity, wound healing, analgesic, antifungal, antiarthritic ,antihyperglycemic hepatoprotective , anti-helminthic, anticonvulsant and antioxidant and potentially other therapeutic effects

REFERENCE:

1.Vivek P. Navale, Mayur K. Kolhatkar, Prof. Gaurav Wanderer, Year of publication 2014, Review on Tridax Procumbens, Journal of Emerging Technological and Innovative Research (Jetir) Issue Number: 2349-5162

2.Himanshu C. Chaudhari, Kiran P. Patil, Year of publication in 14 Fed 2022, A Review on Tridax Procumbens. Linn, Research and Reviews in Pharmacy and Pharmaceutical Sciences, E-Iss N 2320-1215.

3.Samantha Beck, Heather Mathison, Toma Todorov, Esli-Armando Calder on- Juarez and Olga R. Kopp, Year of publication in 28 jan 2018, A Review of Medicinal used and Pharmacological Activity of Tridax Procumbens, Journal of plant Studies vol-7 ISSN:1927-0461.

4.Varsharani V. Ingole a, b, Pravin C. Mhaske a, Sushma R. Katade c, December 2021, Phytochemistry and pharmacological aspects of Tridax Procumbence (L): A systematic and comprehensive review, www.scincedirect.com/journal/phytomedicine-plus, ISSN:2667-0313.

5.Surendra Agrawal, Deepak Mohale and G. S. Talels (2010) Pharmacological activity of Tridax Procumbencs (Asteraceae), International journal of Phytomedicinal and related industries.

6.Himanshu C. Chaudhari, Kiran P. Patil, Year of publication in 14 Fed 2022, A Review on Tridax Procumbens. Linn, Research and Reviews in Pharmacy and Pharmaceutical Sciences, E-Iss N 2320-1215.

7.Samantha Beck, Heather Mathison, Toma Todorov, Esli-Armando calder on- juarez and Olga R. kopp, Year of publication in 28 jan 2018, A Review of Medicinal used and Pharmacological Activity of Tridax Procumbens, Journal of plant Studies vol-7 ISSN:1927-0461

8.Oudhia, P. (2001). Tridax procumbens L. (Coat Button): An Unpromising Weed or a Potential Drugstore. http://www.botanical.com/site/column poudhia/5_tridax.html

9.David M Musyimi and Pascalia Neema Year of publication in 2019 Phytochemical and Antibacterial Activities of Leaf Extraction of Tridax Procumbens Linn on Staphylococcus aureus and Escherichia Coli, East African Scholars Journal of Biotechnology 43and Genetics Vol-1ISSN:6

10.Rajaram S. Sawant and Ashvin G. Godghate Year of publication in 2013, Preliminary Phytochemical Analysis of Leaves of Tridax Procumbns Linn, International Journal of science, Environment and Technology Vol-2 ISSN:2278-3687.

11.Yusuf Andriana, Tran Ngoc Quy, Year of publication in January 2019, Anti hyperuricemia, Antioxidant, and Antibacterial Activity of Tridax Procumbens L.

12.R. S. A. Sorna Kumar, P. N. Karl J. Samuel, Year of publication in 2016, Anti-oxidant, anti-diabetic, antimicrobial and hemolytic activity of Tridax procumbens., www.jocpr.com, ISSN: 0975-7384.

13.Yusuf Andriana, Tran Dang Xuan, Tran Ngoc Quy, Year of publication in2019, Ant hyperuricemia, Antioxidant, and Antibacterial Activities of Tridax procumbens L.

14.Dewashish Kaushik, Alokit Tanwar, Year of publication in September 2020, Ethnopharmacological and phytochemical studies of Tridax Procumbens Linn: A popular herb in Ayuveda Medicine, http://www.ijert.org, Vol. 9, ISSN 2278-0181.

15.A. MANJAMALAI, SRUTHI VALAVIL, Year of publication in 2012, EVALUATION OF ESSENTIAL OIL OF TRIDAX PROCUMBENS L. FOR ANTI-MICROBIAL AND ANTI-INFLAMMATORY ACTIVITY, ISSN- 0975-1491, vol 4.

16.Awasthi S, Irshad M k, Ganti S.S, Year of publication in May 2009, Anti-inflammatory Activity of calotropis gigantea and Tridax Procumbens on carrageenin Induced Paw Edema in Rats.

17.Sujit s. Kele and Amol s. Deshmukh, Year of publication in jan 2014, Tridax Procumbencs A Medicinal Gift of Nature, Asian Journal of Research in Biological and Pharmaceutical sciences ISSN: 2349-4492.

18.Oudhia, P. (2001). Tridax procumbens L.--a medicinal herb of Indian origin. Revista Brasileira de pharmacognosy, 11(1)

19.Sunil Christudas, TM Kulathivel, P Agastian Year of publication in 2012, Phytochemical and antibacterial studies of leaves of Tridax procumbens L., Asian Pacific Journal of Tropical, vol 2.

20.Chaudhari. R.D, Girase. P.R Year of publication in 2018, A review on Tridax Procumbens Linn, Asian Journal of Pharmacy and Technology, ISSN 2231-5705.

21.Varsharani V. Ingole a, b, Pravin C. Mhaske a, Sushma R. Katade c, Year of publication in 2022, Phytochemistry and pharmacological aspects of Tridax procumbens (L.): A systematic and comprehensive review. www.sciencedirect.com /journal/phytomedicine-plus

22.Vishnu Priya Pittu, Srinivasa Rao Avanapu, Year of publication in February 2015, Evaluation of Anticancer Activity of Tridax Procumbens leaf extract on A549 and Hep G2 cell lines, ISSN 0974-2441.

23.Surendra Agrawal, Deepak Mohale Year of publication in May 2010 Medicinal plant- Internal Journal of Phytomedicines and Industries. Pharmacological activity of tridax procumbens (Asteraceae). https://www.researchgate.net /publication/272867279.

24.Dewashish Kaushik, Alokit Tanwar, Year of publication in September 2020, Ethnopharmacological and phytochemical studies of Tridax Procumbens Linn: A popular herb in Ayuveda Medicine, http://www.ijert.org, Vol. 9, ISSN 2278-0181.

25.R. Amutha Raju, A Sudha, Year of publication in May 2019, Tridax procumbences (Coat Buttons) – a Gift of Natural: An overview, https://www.researchgate.net/publication/333207737.

26.Abhijit Sonawane, Rashmi S. Srivastava, Nikita Sanghavi, Year of publication in 2014, Anti-diabetic activity of Tridax procumbens, www.jsirjournal.com, ISSN 2320-4818

27.Pranabesh Ghosh, Swagata Biswas, Year of publication in April 2019 Morphological, ethnobiological and phytopharmacological attributes of Tridax Procumbens Linn. (Asteraceae): A Review. https://www.researchgate.net/publication/333295680.

28.Sneha Mundada, Ruchi Shivhare, Year of publication in 2010, Pharmacology of Tridax procumbens a Weed, International Journal of PharmTech Research, ISSN: 0974-4304, vol 2.

29.Shankul Kumar, Anuradha Prasad, Year of publication in 2012, Pharmacogenetic, Phytochemical and Pharmacological Review on Tridax procumbens Linn, ISSN 0976 – 3333.

30.Omolola. E Omotosho, Olusegun Akinola, Year of publication in 2023, A Mini Review on Some Known Medicinal Uses of Tridax procumbens., Tropical Journal of Natural Product Research, https://www.tjnpr.org, ISSN 2616-0684

31.Debolina Dattaray, Year of publication in: 29.07.2022, Traditional Uses and Pharmacology of Plant Tridax procumbens: A Review, ISSN 0975-8453

32.Shivdas R. Tade and Nikita S. Singhal, Year of publication in 2023, PHARMACOLOGICAL PROPERTIES OF TRIDEX PROCUMBENS LINN. www.wjpr.net ISSN 2277– 7105, vol 12.