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Multiple Health Beneficial Herbal Plant-Tridax Procumbens

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Abstract: *Tridax Procumbens :- It is a medicinal plant and use as a treatment of many diseases like high blood pressure, malaria ,diarrhoea ,stomach ache diarrhea, bronchial catarrh, diabetes, dysentery, wound healing etc. In this we study about the coat Button plant/Tridax procumbens and its various medicinal effects on human body.*

As we know the tridax procumbens plant is most common herbal plant generally use from ancient times in rular areas for multiple health related problems. Commonly it can use for the healing of injured body parts like cut, scrab, swelling and, pain etc.

Trdax procumbens having various medicinal properties like, Anti-inflammatory, antioxidant, antibacterial, Anti hyperuricemia etc. Generally, leaves of these plant is very beneficial for human body, by crushing the leaves of tridax procumbens we get a liquid extract of that leaves and it can be containing various chemical constituents which can gives multiple beneficial effects to human body.

The leaves of tridax procumbens were screened for the presence of bioactive molecules. They had high Flavonoids, Alkaloids, hydroxycinnamates, tannins and phytosterol, moderate benzoic acid derivatives and lignans, and low carotenoids contains.

Keywords: Antibiotic uses, leaves extract (liquid), solid paste of leaves (Lape in Marathi)

I. INTRODUCTION

Tridax procumbens commonly known as coatbutton or tridax daisy. The species of flowering plant int the family Asteraceae. It is bestly known as widespread weed & pest plant. It is a native to the tropical American's but it has been introduced to tropical, subtropical and mild temperature region worldwide. Tridax procumbens L is a medicinal plant and used as a drink to treat bronchial catarrh, dysentery, liver diseases, High blood pressure, malaria, diarrhea, stomach ache, diabeties etc.

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"Tridax Procumbens/Coatbutton''

COMMON NAME:-

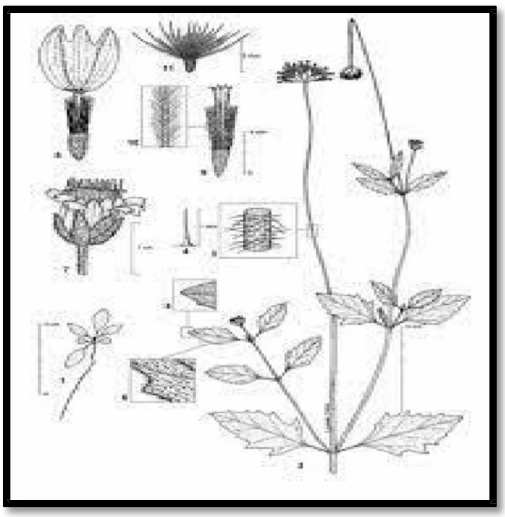
Its common names include coatbutton and tridax daisy in English, Ghamra in Hindi, Jakhamjudi & Tantani, kurmudi in Marathi, Jayanti Veda in sanskrut, Jayanthi in kannada, Cadillo chisaca in Spanish, herb caille in French, Ghajadvu in Gujrati, Chiravanakku in Malayalam, Bikhalyakarani in Assamese,Tridhara in Bengali, bishlya karani in Oriya, gayapaaku and gaddi chemanthi & balapaaku in Telugu , Vettukaaya poondu or thatha poo or kinatruppasan in Tamil,Ghaburi in Gujrati,Kotobukigiku in Japanese, Tin tukae in Thai zagh mai hayat in Urdu

SCINTIFIC CLASSIFICATION :-

- **Botanical Name –**Tridax procumbens
- **Kingdom –**Plantae
- **Clade –** Tracheophytes / Angiosperms /Eudicots /Asterids
- **Order –** Asterales
- **Family –**Asteraceae
- **Genus –**Tridax
- **Species –**T. Procumbens

MORPHOLOGY OF PLANT

Tridax procumbens L. is a hirsute, perennial herb with very dense structure. The leaves are simple, Ovate to lanceolate in shape, decussate with cuneate base, acute apex, serrated to coarsely dentate margin and ex-stipulate opposite phyllotaxi. It grows up to 40 cm or more height. Sometimes perennial prostrate to ascending herb, the flowering axes reaching up to 50cm tall. It is covered with stiff, erect hairs



Similar Species - Cotyledons

First Leaves: – First leaves are opposite, similar and petiolated. The lamina is oblong to lanceolate. The margin is entire; both surfaces are hispid.

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Stem: - Stem is cylindrical, solid and very hispid, covered with multicellular hairs 1mm. Habit: - A prostate to ascending herb, the flowering axes reaching up to 50cm high.
Underground System: - Strong taproot.

Leaves: - Opposite, simple born on hairy petioles,0.5-2cm long. Leaf blades are dark green, thick and soft, oval to lanceolate,2.5-6cm long and 2-5 cm wide, with a cuneate base and margins strongly and irregularly toothed; both sides are hispid, with pubescence more abundant on the undersite; lateral veins 2-3 on each on the midrib.
Inflorescence: - Flowers produced in head about 10×10-12mm. Peduncles hairy,11-20cm long. Heads surrounded by brackets, the outer brackets hairs each bract about 7×4mm, inner bract glabrous,7-8 mm long.

At the periphery of the receptacle are 4-7 female creamy white florets, the ligule (5mm long and 3mm wide) is three-toothed. In the canter of flowering head are numerous yellow bisexual tubulate florets; the tube (5mm) in length is topped with 5 short teeth. Membranous scale are present between the florets.

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Flowers: - The disc florets are yellow and tubulates while the ray florets are creamy white.

Fruits: - The fruit is conical achene 16-3 mm long, pubescent and dark brown to black at maturity, topped with a pappus,5-6mm long, of ca.20 slender, plumose bristle, alternately long and short, and horizontally spreading at maturity.

CHEMICAL COMPOSITION: -

Flavonoids Composition: -

COMPOUNDS	Retention Time(min)	Composition (mg/kg.) Dry wt.	Composition (mg/kg) Wet wt.
(+) -Catechin	13.749	5187.515	516.185
(+) -Gallocatechin	15.043	1522.281	151.467
Genistein	15.626	1590.816	158.286
Daidzein	16.047	3986.855	396.692
Apigenin	16.380	5127.089	510.145
Butein	16.680	2849.149	283.490
Naringenin	16.792	4071.731	405.137
Biochanin	17.101	5339.931	531.323
luteolin	17.371	1111.266	110.571
Kaempferol	180503	11,453.533	1139.627
(-) Epicatechin	19.530	8162.805	812.199
(-) Epigallocatechin	20.578	1826.631	181.750
Quercetin	21.455	2875.972	286.159
(-) Epicatechin-3gallate	22.610	134.977	13.430
(-) Epigallocatechin-3gallate	23.238	263.286	26.197

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Isorhamnetin	24.104	324.132	32.251
Robinetin	24.193	2535.979	252.330
Ellagic acid	24.546	1183.313	117.740
Myricetin	24.796	915.467	91.089
Baicalein	25.701	1983.819	197.390
Nobiletin	26.356	1944.091	193.437
Baicalin	26.956	478.418	47.603
Silymarin	27.813	233.524	23.236
Total Flavonoids	-	**65,102,577**	**6477.706**

Alkaloid Composition: -

COMPOSITION	Retention Time(min)	Composition (mg/kg) Dry Wt.	Composition (mg/kg) Wet Wt.
Choline	7.085.	181.122	18.022
Trigonelline	7.642	324.271	32.265
Angustifoline	8.073	2307.790	229.625
Sparteine	9.035	16.494	1.641
Ellipcine	9.785	38.235	3.804
Lupanine	11.178	2372.643	236.078
13-alfa- Hydrorhombifoline	11.296	51.108	5.085
9-Octadecenamide	12.810	40.003	3.980
Oxoassoanine	15.375	331.419	32.976
Cinchonidine	16.646	335.341	33.366
Chinchonine	16.347	144.085	14.337
Buphadrine	16.544	28.978	2.883
Indicine-N_oxide	17.472	119.855	11.926
Powelline	18.669	41.741	4.153
Ambelline	19.669	41.741	4.153
6-Hydeoxybuphanidrne	20.552	20.539	2.044
Acronycine	21.239	43.732	4.351
Monocrotaline	21.388	95.111	9.464
Nitidine	22.347	80.852	8.045
Echitamidine	26.786	488.511	48.607
Voacangine	27.072	16,907.728	1682.319
Mitraphyline	27.624	0.010	0.001
Camptothecin	28.229	5.434	0.541
Cochicine	29.036	1.322	0.132
Emetine	29.462	8.172	0.813
Tetradrine	30.151	1.786	0.178
Thalicarpin	30.050	2.369	0.263
Paclitaxel	32.211	3.238	0.322
Total Alkaloid	-	24,023.136	2,391.44

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Benzoic acid derivative, carotenoids, phytosterol, hydroxycinnamates and tannins composition of tridax procumbens: -

COMPOUNDS	Retention time(min)	Composition (mg/kg) Dry Wt.	Composition (mg/kg)Wet Wt.
Benzoic acid derivatives			
4-Hydeoxybenzaldehyd e	8.947	73.708	7.334
4-Hydroxy benzoic acid	12.363	48.358	4.812
Vanillic acid	15.234	53.564	5.330
Ferulic acid	18.052	150.161	14.941
Total benzoic acid derivative	-	325.792	32.416
Carotenoids			
Neoxanthin	19.525	1.2112	0.1205
Viola-xanthin	20.542	0.5028	0.0500
Anthera-xanthin	21.411	1.6080	0.1600
Carotene	23.191	1.9556	0.1980
Lutein	24.796	8.8870	0.8843
Total Carotenoids		14.1947	1.4124
Phytosterols			
Stigmasterol	23.264	2032.970	202.281
Sitosterol	24.802	481.414	47.901
Total Phytosterol		2514.390	250.181
Tannins			
Tannic acid	19.223	8157.408	813.453
Total Tannins		8157.408	813.453
Hydroxycinnamate			
Caffeic acid	14.096	5830.871	580.172
Total Hydroxycinnamate		5830.871	580.172

Lignans Composition: -

COMPOUNDS	Retention time (min)	Composition (mg/kg) Dry Wt.	Composition (mg/kg) Wet Wt.
(9E,12E,15E)- 9,12,15-Octadecatrin-1-ol	14.095	0.00014	0.000,01
Apigenine-4,7- Dimethyl ether	16.270	0.02540	0.002,53
Dehydroabietic acid	18.618	94,930,90	9,445,92
Retusin	19.625	60.875,60	6.057,12
Galgravin	20.444	600.666,70	59.766,34
Epieudesmin	22.324	20.293,10	2.019,
Total Lignans		776.794,70	77.291,07

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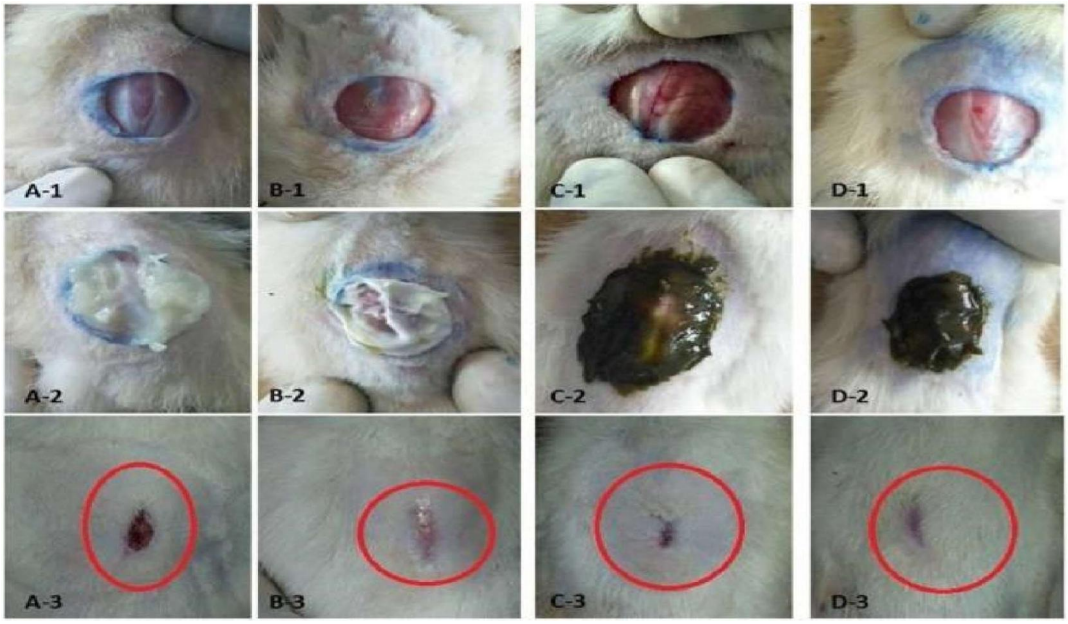
PHARMACOLOGYCAL ACTIVIES OF *TRIDAX PROCUMBENS* ON VARIOUD TYPES OF DISEASES

Wound Healing Activity: -

T. Procumbens extract 200 mg/micro gram IP injected to
experimental rabbits, reduces normal heparin induces prolongation to clotting time The aqueous extract of tridax or paste of leaves of *tridax procumbens* leaves are traditionally used in wound healing by tribal peoples. The matured leaves are crushed to make a paste and applied on surface of the wound. It can not only promote healing but also overcome steroid depressed healing in experimental male wistar rat. The increase in nucleic acid level indicates the action of cellular level. Dexamethasone 0.33 mg/kg IM, on first day and half this dose thereafter daily, depressed contraction,epithelization,tensile strength and process of granulation of wounds in experimental animals. Juice from the leaves of t. procumbens (T.P.1ml, I.P,daily) resembled dexamethasone in effect on wound contraction and granulation; but it significantly counteracted the effect of dexamethasone on tensile strength and epithelization .*T.procumbens* increase in adrenal weight and in thymus weight. This observation suggested that T.procumbens exert a direct Pro healing effect along with an indirect Anti healing influences probably medicated through release of adrenal steroid (Udupa *et al*.., 1998)



* Wound healing process after applying *T.procumbens* leaves paste *

Anti-Microbial Activity: -

The t.procumbens based bacterial cellulose showed strong antimicrobial activity against staphylococcus aureus (Gram-Positive). Candida albicans (Yeast) and Pseudomonas aeruginosa. E. coil (Gram Negative). Hence this T. procumbens based biopolymer is excellent product for wound activity. A new flavone (C28H24O11), (M. P-270 ‘C) isolated from T.procumbens identified as 5,7,4-trihydroxy-6, 3-dimethyl flavone-5- o-alpha rhamnopyranoside (Glycoside) (Yadava and saurabh,19981). The dry extracts of alpha *Acalpha indica,* were screened and compared for antimicrobial activity. Their antibiotic activity was more than of penicillin-G (Devi and Suneeta 1990). Antibacterial activity of aqueous extracts of 16 different ethnomedical plants at two different weights of plant residue,30 and 40 mg has been tested against three-gram positive bacteria and seven-gram negative bacteria by the filter paper disc diffusion method. Th maximum inhibition was observed and T.procumbens against Aeromonas hydrophilla and bacillus cereus (Perumal *et al*., 1999).

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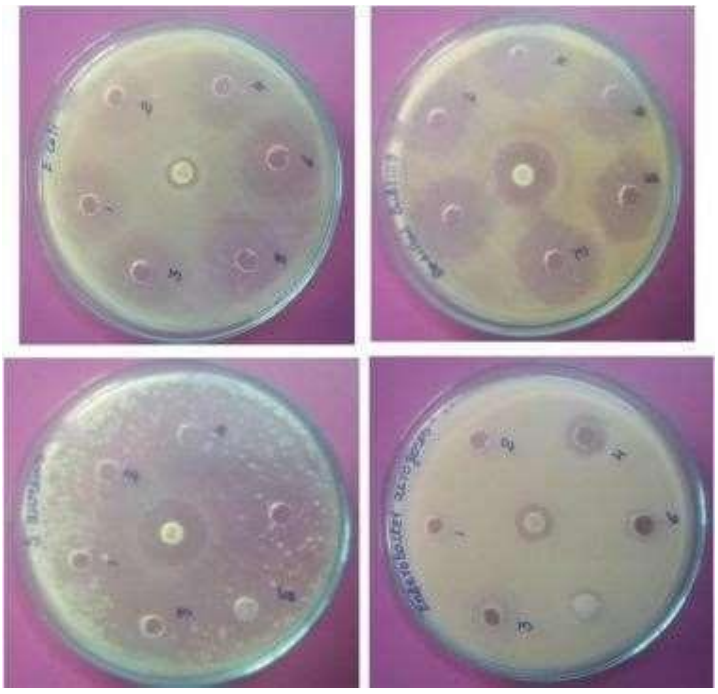

Anti-Microbial Activity of T.procumbens

Anti- Inflammatory Activity: -

T.procumbens leaves can be, thus, used for the development of a safe,natural,anti-inflammatory drug as it showed a strong inhibitory action on inflammation by acting at molecular level. The aqueous extract of T.procumbens Leaves was lyophilized and studied on the excision wound model, rat skin fibroblast and rat paw oedema. T.procumbens did not significantly increase the fibroblast could compared in the, T.procumbens and ibuprofen. Wound contraction was compared in the T.procumbens and ibuprofen treated groups. Epithelialization was significantly in T.procumbens group. The aspirin treated group showed significant retardation in both parameters. The fibroblast cell count, hydroxyproline/DNA ratio collagen synthesis was insignificant in the control and T.procumbens treatment while ibuprofen and aspirin treatment had a significant effect on the above-mentioned parameters. In the carrageenan induced oedema model, inhibition of oedema was comparable in 200mg/kg T.procumbens and 50mg/kg ibuprofen treatment and the specific activity of the enzyme gamma glutamyl transpeptidase was comparable in the T.procumbens, ibuprofen and aspirin at 200mg/kg (Margaret et al..,1998)

Anti-Oxidant Activity: -

Procumbens showed combatively better antioxidant potential. The tested plant leaf extract shows high activity against human lung cancer cell than breast cancer cell lines.250 micro gram/ml plants extract showed 84 +- 2.8% toxicity against human lung cancer. Fractions of methanolic extract from the aerial part werw screened for antioxidant activity by DPPH (alpha, alpha-diphenyl-Beta-picrylhydrazyl) (DPPH; C18H12N5O6, M=394.33) method. The ethyl acetate and n-Butanol fractions had shown significant activity which is comparable to the activity of standard antioxidant Ascorbic acid (Agrawal *et al.*.,2009)

Anti-Diabetic Activity (Diabetic Foot Disease):

T.procumbens, a flavonoids plant. Commonly used in Indian traditional medicine as anticoagulant, hair tonic, antifungal and insect repellent, in bronchial catarrh, diarrhoea, dysentery, and wound healing. T.procumbens is known for several potential therapeutic activities like antiviral anti-oxidant wound healing etc. Some reports from tribal areas

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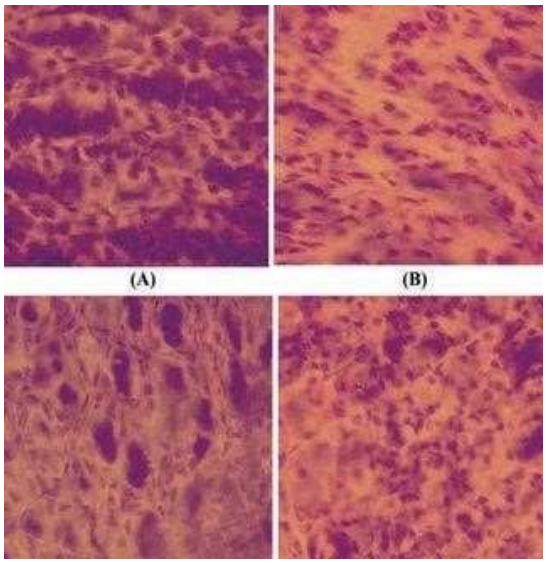
in Indian state that the leaf juice can be used to cur fresh wounds, to stop bleeding as a hair tonic. It can be used may be the presence of phytochemicals present in it as well as other properties.

Anti-Diarrheal Activity: -

The antidiarrheal activity as well as the phytochemical properties of the aqueous and ethanolic leaves extract of T.procumbens was use for the treatment of diarrhea T.procumbens leaves revealed the presence of 12 bioactive compounds which are alkaloid, saponin, phenol, phytosterol, tannins, flavonoids, cardiac glycosides, steroids, etc. Mainly Tannins, phytosterol, tritpenoid and phlobatannins were detected in trace amount for the aqueous extract compared to the ethanolic extract. Both ethanolic leaves and aqueous extract Showes significant ($p<0.05$) antidiarrheal activity on gastrointestinal motility with the castor oil-induced diarrheal model. The aq. Extract shows no significant reduction ($p<0.05$) in the no. Of stool for 2hrs when compared with Lomotil drug

Anti-Ulcerative Activity: -

The result of this study has shown that the T.procumbens extract possess anti-ulcerogenic properties against 80% ethanol in 0.1 HCL induces gastric ulceration in Wistar rats. The results also showed that dose below 500 mg/kg-1 b. T.procumbens plant currently used for treatment of stomach ailments. The present study was performed to evaluate the antiulcerogenic activity of the hydroalcoholic, chloroform and petroleum ether combined extract of the plant against gastric ulceration was induced in 84hrs starved rats. The rats were given the plant extract at the dose of 250mg/kg and 500 mg/kg orally. The result shows that the whole plant of T.procumbens has protective against Indomethacin induced ulcer in rats. T.procumbens (250mg/kg) dose significantly inhibited gastric ulceration when compared to control group.



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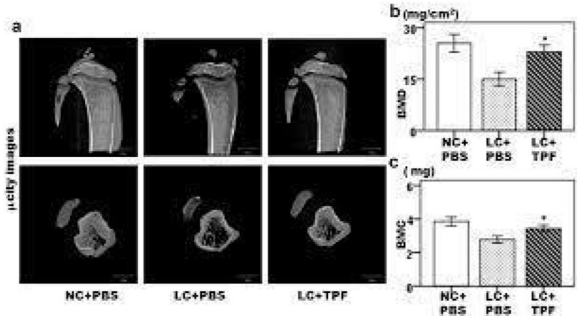
Protective effect of *T. Procumbens Linn.* Leaves on Experimentally induced Gastric Ulcers in Rats

Use in Treatment of Osteoporosis: -

Procumbens flavonoids (TPF) significantly suppressed the RANKL-induced Osteoclasts differentiation and bone resorption. The TPF also promoted osteoblast differentiation and bone formation demonstrated by increasing bone formation, markers in cultured mouse primary. Homeostasis of bone is closely regulated by the balanced activities between the bones resorbing activity of osteoclast cells and bone forming ability of osteoblast cells.

Multinucleated osteoclasts degrade bone matrix and involve in the dynamic bone remodeling in coordination with osteoblast. Disruption of this regulatory balance between these cells or any imbalance in bone remodeling caused by a higher rate of resorption over construction of bone result in a decrease of bone matrix density include mineral density (BMD).



Marketed Formulations of T.Procumbens /Coatbutton.

Herbal Ointment: -

Traditionally the juice from leaves of tridax procumbens has been used for healing dermal wound. However, in experimental studies, equivocal pro and anti-healing action of T. procumbens has been demonstrated. The present study evaluates the effect of topical ointment formulation of leaf juice of t. procumbens using excision wounds (4mm) were inflicted on depilated back of mice.

Herbal Gels: -

Tridax procumbens extract 500mg- • Carbopol, 940, 1.5gm
HPMC 1.5gm
Triethanolamine 4ml 2ml
PEG (poly Etheline glycol)
Propyl paraben 50mg
Water up to 50 ml
Herbal Oil: -
Tridax procumbens extract
Carbopol 940, 1.0gm
Propylene glycol 10ml
Methyl paraben 0.2ml
Propyl paraben 0.1ml
Glycerin 1.0ml
Triethanolamine Q.S
Water 100ml

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Herbal Paste: -

T.procumbens leaves are used in wound healing. The matured leaves are crushed to make a paste and applied on the surface of the wound.

Tridax/Ghamara Tablet:

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