

**TRIDAX PROCUMBENS MEDICINE FOR LIFE: AN OVERVIEW****ATISH K MALDHURE\***

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**ABSTRACT**

Nature has been a source of medicinal agents for thousands of years and an impressive numbers of modern drugs have been isolated from natural resources. *Tridax procumbens* Linn (Family –*Asteraceae* common name- Dhaman grass) is a common herb found in India. *Tridax procumbens* is well known Ayurvedic, ethno-botanical and unani medicinal plant. Pharmacological studies have shown that *Tridax procumbens* possess properties like anti-inflammatory, hepatoprotective, wound heal, antimicrobial, antiseptic, hypotensive and bradycardiac effects. The whole plant was reported to treat various elements, such as dysentery, diarrhea and preventing hair loss. These properties are mainly due to many active phytochemicals including the presence of carbohydrates, proteins, tannins, steroids, alkaloids, dexamethasone, luteoline, glucolureolin,  $\beta$ -silosterol, flaone, glycoside and quercetin in this plant.

**KEYWORDS:** *Tridox procumbens*, phytochemical activity, antimicrobial, anti-inflammatory, wound healing.

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## INTRODUCTION

Man has always been surrounded by countless microorganisms. The disease producing microbes are playing a very important role in human life. Therefore, the chemotherapy of infectious diseases has proved to be a continuous struggle. Scientists are always in search of new antimicrobial agents to control the ever increasing menace of microbes. Therefore medicinal plants are gifts of nature to use as a source of medicine from ancient times<sup>1</sup>. The abundance of plants on the earth's surfaces has led to an increasing interest in the investigation of different extracts obtained from traditional medicinal plants as potential source of new antimicrobial agents<sup>2</sup>.

## PHYTOCHEMICAL STUDY

The phytochemical study revealed the presence of alkaloids, carotenoids, dexamethasone, luteolin, flavonoids, tannins and proteins in leaf extract, luteolin, glucoluteolin, quercetin and isoquercetin in flower extract whereas fumaric acid, setosterol and tannin in the other part of plant extract<sup>3-9</sup>.

## ANTIMICROBIAL ACTIVITY

The antimicrobial activity was evaluated by disc diffusion method, using both fungal and bacterial strain by Manjamalai et al<sup>10</sup>. Maximum zone of inhibition was obtained for *E. coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* than *Streptococcus pneumoniae*. Satyanarayana et al<sup>11</sup> were studied antibacterial activity of different phytochemical extracts from the leaves of *T. procumbens* Linn against *Staphylococcus aureus*, *Escherichia coli*, *Proteus mirabilis* and *Vibrio cholerae*. Antibacterial activity of hexane, petroleum ether, chloroform and methanol extract obtained from the aerial parts of *T. procumbens* was tested against both gram positive (*Staphylococcus aureus* and *Bacillus subtilis*) and gram negative (*Enterobacter aerogenes*) using agar well diffusion method, indicated the presence of more active compound in methanol than in hexane extract<sup>12</sup>. Bobbarala et al<sup>13</sup> studied antifungal

activity of whole plant extract against phytopathogenic fungi, *Aspergillus niger*. The leaf extract of *T. procumbens* was tested against *Fusarium oxysporium f. sp. udum*. Bultar Var *Crotolariae* (Kulkarni) pidwick causing seeding blight of Pigeon pea<sup>14</sup>. Aniel et al<sup>2</sup> studied antibacterial potential against *E. Coli*, *Klebsiella pneumoniae*, *Proteus vulgaris*, *Bacillus subtilis* and *Staphylococcus aureus* and found minimum inhibitory concentration ranged between 1.9 - 19.5. Yoga et al<sup>15</sup> were studied antimicrobial activity of *T. procumbens* L. as food preservatives. Free and bound flavonoids of different parts of *Tridax procumbens* L. have been studied for their antimicrobial activities and found *C. albicans* most susceptible organism and can be exploited for future antimicrobial drugs<sup>1</sup>. Mohato and Choudhary<sup>16</sup> have been documented for their ethnomedicinal uses and screened for their antibacterial activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa* and observe positive response against *E. Coli*, *S. aureus*, *S. epidermidis*, *P. Vulgaris*, *P. Mirabilis*, *K. Pneumoniae* and *S. Marcescens* were isolated from a wound infected patients by Wasnik and Tumane<sup>17</sup>, and shown least inhibitory activity against all the clinical isolates from wound. The antifungal activity of *T. procumbens* was evaluated against *Fusarium oxysporum* involved in wide disease of ginger. The ethanolic extract of *T. procumbens* leaf exhibits toxicity against the test fungus inhibiting the mycelial growth up to 60%<sup>18</sup>. Kale et al<sup>19</sup> studied in-vitro antimicrobial activity of hot water and methanolic extracts of the leaves of *Tridax procumbens* against five bacterial pathogens, *S. aureus*, *E. coli*, *K. pneumoniae*, *P. vulgaris* and *P. aeruginosa*. Both the extracts showed antibacterial activity against the tested strains as compared to standard; except for *Klebsiella pneumoniae*. The methanolic extract was found to be more effective than water extract against all bacteria and exhibited a higher inhibition activity against *Escherichia coli*, *Proteus vulgaris* and *Pseudomonas aeruginosa*. Antibacterial study of methanolic extract of *T. procumbens* by disc diffusion method studied by Muthusamy et

al<sup>20</sup>. The methanolic extract shown highest activity against *S. typhi*, *S. flexneri* and least activity against *E. coli*.

## HEPATOPROTECTIVE ACTIVITY

Hepatoprotective activity of *Tridax procumbens* L. was evaluated against paracetamol induced hepatic damage in male albino rats by Wagh and Shinde<sup>21</sup>. The oral administration of varying doses of ethanolic extract of *Tridax procumbens* L. for the period of 7 days revealed these altered parameters to normal levels indicating hepatoprotective efficacy of *Tridax procumbens* L against paracetamol induced liver injury. Vilwanathan et al<sup>22</sup> studied the hepatoprotective activity of aerial parts and chloroform insoluble fraction from ethanolic extract of *Tridax procumbens* L were reported against D-Galactosamine/Lipopoly-saccharide (D-GalN/LPS) induced hepatocellular injury of liver cells. The levels of marker enzymes like a spartate transaminase, alanine transaminase, alkaline phosphatase, lactate dehydrogenase, gamma glutamyl transferase and bilirubin in serum and blood as well as histopathological examination of liver sections supports the same. The methanolic extract of *T. procumbens* was tested for acute and subchronic anti-hyperglycemic activity in alloxan induced diabetic rats and for acute toxicity test among normal rats and observe body weight as well as glucose tolerance levels<sup>23</sup>. The extract showed a significant reduction in fasting blood glucose levels in diabetic rats.

## ANTIVIRAL ACTIVITY

The therapeutic potential of *Tridax procumbens* L. extracts were screened for antitrypanosomal properties in mice infected with *Trypanosoma brucei* by Abubakar et al<sup>24</sup> and found insufficient antitrypanosomal activity.

## ANTI-INFLAMMATORY ACTIVITY

The anti-inflammatory activity of extract was assessed on carrageenin induced paw edema along with standard drug, Ibuprofen<sup>25</sup>. The

extract increased the inhibition of edema if treated with standard drug Ibuprofen. Water soluble powder of leaf extract was administered orally at different doses to rats. The results demonstrated that the extract possessed analgesic activity. *Tridax procumbens* L dose reduced the abdominal writhing<sup>26</sup>. Meshram and Patil<sup>27</sup> investigated that alcoholic and hydro-alcoholic extract have anti-inflammatory activity using the rat-paw edema assay and showed edema inhibition 10.82%, 16.80% and 11.39%.

## WOUND HEALING ACTIVITY

The aqueous extract of whole plant of *Tridax procumbens* L has ability to set the normal and immune compromised wound healing in rats<sup>28</sup>. Wound healing process involves complex interaction between epidermal and dermal cell by Bhat et al<sup>29</sup>. Udupa et al<sup>30</sup> reported that plant not only increase lysyl oxidase but also, protein and nucleic acid content in the granulation tissue.

## OTHER MISCELLANEOUS APPLICATIONS

Isaiarasu et al<sup>31</sup> studied the effect of herbal extracts on the microbial pathogens causing flacherie and muscardine diseases in the malbery silkworm, *Bombyx mari* L. The comparison of effects indicated that alcoholic extracts were generally more effective than aqueous extract. *Tridax procumbens* L employed as medicine for a variety of ailments including jaundice, anticoagulant and in dysentery<sup>21, 32, 33</sup>. Dube et al<sup>34</sup> determined the appropriate protocol for the rapid propagation of *Tridax* plant and investigate that the medium containing 4 mg/L BAP along with 0.5 mg/L of 2,4-D proved to be best for in vitro shoot formation and multiplication at these concentration. The effect of an aqueous extract of the leaves of *Tridax procumbens* L on the haematology, plasma biochemistry and ocular indices of oxidative stress was investigated in alloxan induced diabetic rats. This study revealed the presence of pharmacologically active compound in the leaf extract<sup>35</sup>. The preclinical study of antinociceptive activity of various ayurvedic doses forms of

avanti (*Tridax procumbens*) was shown significant and encouraging results<sup>36</sup>. In the different dosage forms of *T. procumbens*, Ghana is most appreciable one. Brahma et al<sup>37</sup> analysed the antiangiogenic property of alcoholic *Tridax Procumbens* leaves extract using shell less culture of chick embryo. This study suggests that extract exhibits a strong antiangiogenic activity. Bhagwat et al<sup>38</sup> and Sonawane et al<sup>39</sup> used *T. procumbens* extract for anti-diabetic activity.

## CONCLUSION

*Tridax procumbens* Linn. is a common weed found throughout India, America, Tropical Africa, Asia, and Australia with increase in use for therapeutic purpose due to important phytochemicals like alkaloids, carotenoids, dexamethasone, luteolin, flavonoids, tannins, luteolin, setosterol, etc. From the present review, it is concluded that *Tridax procumbens* is widely useful in Antimicrobial, Hepatoprotective, Antiviral, Anti-inflammatory, Wound healing activity and other miscellaneous applications.

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