Int. J. of Life Sciences, 2013, Vol.1 (2): 93-109 ISSN: 2320-7817 | eISSN: 2320-964X

Ethno-medicinal survey for wound healing plants from rural area of Nagpur

BHAJBHUJE MN

Department of Botany, Jawaharlal Nehru Mahavidyalaya, Wadi, Nagpur (M.S.) India.

Address for Correspondance: Email- dr_mnbhajbhuje@rediffmail.com

Article received: 20/04/2013 | Accepted: 08/06/2013

ABSTRACT

Since immemorial times, the tribal community has a traditionally self-managed system of folk medicine and primary healthcare mainly based on herbal remedies. In the past, human ancestors made new discoveries of the healing power of plants through trial and error. Although some of the therapeutic properties attributed to plants have proven to be erroneous, medicinal plant therapy is based on the empirical findings of hundreds and thousands of years. Ethno-medicinal survey of hilly rural area of village *Kanholi - Pohi dam - Salaidabha* belong to taluka Hingna of district Nagpur, a part of central India, has been conducted and revels that plants parts like leaves(47.4%), fruits(15.8%) whole plant(10.5%) of total 38 plants belongs to 29 families have been used by adiwasi (tribal) & rural population against wound therapy and related injuries such as cuts, burns, bruises caused by external injury, boils, sores, and abscess The herbal medicine preparation as paste was applied topically whereas syrup preparations were administered orally. In the present study, 38 plants have been reported to have specific wound healing property. With regards to wound healing plants species, Acanthaceae Euphorbiaceae and Lamiaceae are represented by highest number of species (3) followed by Liliaceae(2), Araceae(2), Moraceae(2) while single plant species is recorded from remaining documented 23 families. Leaves were found to be the most frequently used plant parts accounting for 18 preparations followed by fruits(6), whole plant parts(4), seed oil (3), stem latex(3), bark(3), flowers(2), roots (2) and others such as rhizome, bulb and resin. The composite preparation from 2 -3 medicinal plants had quick wound healing effect. The plants products composed of active principles like triterpens, alkaloids, flavonoids, tannins, biomolecules, minerals of Ca, K and Mg etc. facilitate wound healing.

KEYWORDS

Ethno-medicine; Herbal medicine; therapy; folk, Vaidhya

INTRODUCTION

The study of ethnomedical system and herbal medicines as therapeutic agent of a paramount importance in addressing health problems of traditional communities, third world countries as well as industrialized societies (Sharma *et al.*, 2013). Herbal medicine is an integral part of the various traditional medicinal practices all over the globe as it relies on medicinal plants for treatment of various ailments. The traditional herbal medicinal practitioners popularly known as "*Vaidhya*" basically make use of medicinal plant decoctions, juices, or paste which are administrated topically or orally for treatment of various disorders. It is estimated that approximately 63% of global population utilize medicinal plants to meet their primary health care needs. Presently, it is also recognized that about half the people in industrialized countries regularly use complementary and alternative medicine. However, this growth in consumer demand and availability of services for complementary medicine has outpaced the development of policy by governments and health professions (Purnima, *et al.*, 2013).

Since ancient time, traditional herbal medicine has been the main source of healthcare for the vast majority of the people in the economic community of India. The use of medicinal plants is well known among the indigenous people in rural areas of many developing countries because plant are

promising potent healers, promoting the repair mechanism in natural way (Sharma *et al*., 2013). Presently, it is estimated that between 70% to 80% of Indian population use traditional medicine for the management of both communicable and non-communicable diseases. Available records showed that high percentage of rural population utilize traditional midwifery for their maternal and neonatal health problems. Rural population used various plant parts in the treatment and prevention of many ailments such as wound healing, respiratory disorders, sexual problems, urinary tract disorders, tooth & gum diseases, anemia, gastrointestinal disorders, bone fracture, eye diseases, pain, fever, paralysis, rheumatism & rheumatic pain, snake bite, heart disorders, poisoning, chicken pox, skin diseases, malaria, diabetes, hypertension, cancer etc. (Purnima *et al*., 2013). Since ancient time, all medicinal preparations were derived either from plant parts like leaves, stems, roots, barks, fruits, flowers, seeds, tubers, bulbs rhizomes or crude extracts, mixtures, etc. Presently, in the developed countries thirty percent diverse group of medical drugs are isolated from various plant parts and their derivatives that are readily effective against substantial number of diseases. The poor hygienic condition in developing countries is reported responsible to cause wound infection among the human population (Gupta & Arya, 2011).

Wounds are the physical injuries that result in an opening or break of skin due to cuts, burns, bruises caused by external injury, boils, sores, and abscess. After injury the objective of wound healing is to restore structure and function to an injured tissue in order to approximate pre-wound characteristics. Healing is complex and intricate process initiated in response to an injury that restores the function and integrity of damaged tissues. Healing process can be categorized into three stages; inflammatory phase (consisting establishment of homeostasis and inflammation); proliferate phase (consisting of granulation, contraction and epithelialization) and finally remodeling phase which ultimately determines strength and appearance of healed tissues (Sharma *et al.*, 2013). Many traditional practitioners have valuable information of many unknown wild plants for treating wounds and burns (Purnima *et al.*, 2013). Ayurvedic drugs of wound healing are derived from plant (70%), mineral (20%), and animal (10%) and these drugs are stated to be effective in different wound conditions(Biaswas and Mukherjee, 2003). The active gradients of plants origin, haemorrheplogics, pentoxyfilline, methyl xanthenes, terpenoids, retinoids, phenytoin, prostaglandis, nitrofuranzone ointment, ibuprofen, colchicine, corticosteroids, antiplatelets (aspirin), anticoagulants (heparin), warfarin, vasoconstrictors (nicotine, cocaine and adrenaline), Vit-A & C, zinc and some growth factors are the drugs having the potential of improving the healing of wounds (Rawat, *et al*., 2012). The phytomedicines for wound healing are cheap, purportedly safe and affordable. A preliminary survey of hilly rural area of village *Kanholi-Pohi dam - Salaidabha* of district Nagpur demonstrated that wounds were one of the major problems among adiwasi tribal & rural population and they preferred herbal medicines of plant origin to heal wounds. Although no systematic ethnomedicinal studies have been undertaken of this area to assess the traditional wound therapies. The present study was performed with the aim of producing an inventory of the plants used by traditional healers in this area to document the traditional therapies practiced for various wound and related injury conditions.

METHODOLOGY

The ethno-medicinal survey was conducted to collect information on medicinal plants used by traditional healers in hilly rural area of village *Kanholi - Pohi dam - Salaidabha,* 40 km away from Nagpur, located in between area of Hingna-Butibori, belong to Taluka Hingna of District Nagpur (M.S.). The adiwasi tribal & rural community has a traditionally self-managed system of herbal medicine and primary healthcare. They practice indigenous phytotherapy to treat common ailments. A few members in the adiwasi community who are recognized as '*Vaidhya*' have knowledge about medicinal plants & herbal remedies.

The ethnomedicinal information was collected through general conversations from the indigenous, oldest group of ethnic people of a study area. They reside in forest areas and practice indigenous phytotherapy to treatment of common ailments. Details of medicinal plants used and mode of treatment were documented by interacting with them. During the course of exploration of ethnomedicinal plants, the information has been gathered from the healers inhabiting areas who

have sound knowledge of herbal remedies. The information received from them was recorded and compared with the previously reported literatures (Biaswas and Mukherjee, 2003). Each plant used to treat wounds was cross referenced with the published literature. Flora of Nagpur District was used to ascertain the nomenclature (Ugemuge, 1976).

RESULTS AND DISCUSSION

The dermis, outermost layer of skin, is to serve as protective barrier against the environment. Wounds are the physical injuries that result in a breaking of the skin and may be accompanied by disruption of the structure and function of underlying normal tissue and may also result from a contusion, haematoma, laceration or an abrasion. Wound may be open, closed, acute or chronic. Local infection, hypoxia, trauma, foreign bodies and systemic problems such as diabetes, mellitus, malnutrition, immunodeficiency or medications are the most frequent causes of chronic wounds (Rawat *et al*., 2012). The insufficient diet, infection at wound site, insufficient oxygen supply and tissue perfusion to the wound area, drugs, elderly age, diabetes and diseases condition affect the wound healing (Sharma *et al*., 2013). The process of healing of wound involves coagulation, inflammation, formation of granulation tissue, matrix formation, remodeling of connective tissue, collagenization and acquisition of wound strength (Purnima *et al*., 2013). A wound healing agent may facilitate by increasing wound angiogenesis and collagen, nucleoprotein and glycoprotein metabolism, leading to improvements in both circulation and building of granulation tissues (Sharma *et al*., 2013). The prevalence of chronic wounds in the community was reported at 4.5 per 1000 population whereas that of acute wounds was nearly doubled at 10.5 per 1000 population. Healing of chronic wound requires care that is patient centered, holistic interdisciplinary, may be cost effective and evidenced based. Several natural products, plant products, which are composed of active principles like tri-terpens, alkaloids, flavonoids and biomolecules have been reported to promote the process of wound healing (Rawat *et al*., 2012).

The hilly rural area of village *Kanholi - Pohi dam - Salaidabha* has a variety of medicinal plants which are used by the adiwasi tribal and rural population for their primary healthcare. The present study identified that "*Adiwasi*" traditional healers used 38 ethnomedicinal plants of 29 families to treat wounds and related injuries such as cuts, burns, bruises caused by external injury, boils, sores and abscess. Of which, *Acalypha indica, Adathoda vasica, Allium cepa, Aloe vera, Anacardium occidentale, Areca catechu, Azadirachta indica, Bauhinia variegate*, *Caria papaya, Carthemus roseus, Calotropis gigantea, Cissampelos pareira, Curcuma longa, Euphorbia antiquorum, E. hirta*, *Ficus benghalensis, Ixora coccinia, Jathropa gossipyfolia, Lantana camera Madhuca longifolia, Morus alba*, *Musa saientum Ocimum basilicum*, *O. americanum O. sanctum, Pothos scandens, Pongamia pinnata, Sesamum indicum, Scoparia dulcis, Solanum xanthocarpum, Themeda triandra, Terminalia bellirica* and *Tridex procumbens* were commonly used in wound healing. The scientific and vernacular names of documented plants, methods of preparation and application have been provided (Table 1).

With regard to the families with wound healing plants, Acanthaceae, Euphorbiaceae, and Lamiaceae were represented by highest number of species (3) followed by Liliaceae(2), Araceae(2), Moraceae(2) while single plant species was recorded from other 23 families. Leaves were found to be the most frequently used plant parts accounting for 18 preparations followed by fruits(6), whole plant parts(4), seed oil(3), stem latex(3) , bark(3), flowers(2), roots(2) and others such as rhizome, bulb and resin. Leaves contributed 47% of the total plant parts used for wound healing followed by fruits(15.8%). The remaining plant parts used varies between 2.6% to 10.5% (Fig. 1). Most of the ethno-medicinal studies confirmed that leaves are the major portion of the plant of the total parts used effective wound healers as they are easily accessible, active in photosynthesis and production of metabolites (Sharma *et al*., 2013).

The wound healing activities of plant have since been explored in folklore. Many Ayurvedic herbal plants have a very important role in process of wound healing (Gupta and Arya, 2011). During the survey observed that, wounds are one of the major problems among the adiwasi communities of study area due to their life in farming in remote area which were treated by the traditional healers residing among them.

.

Table 1 : Commonly used wound healing plants, their vernacular names, plant part(s) used, method of preparation and application

Sr. No.	Scientific name	Vernacular name	Plant part(s) used	Method of preparation	Application
1	*Acalypha indica* L (Acanthaceae)	Eng : Indian nettle Hin : Kuppi Mar : Khajoti	Leaf	Leaf of this plant is ground into a paste and taken orally along with leaf paste of *Mimosa pudica* and *Azadirachta indica* and flowers of *Albizzia lebbeck* to treat skin diseases (itching) and wounds	Oral Dosage: Once a day for 3 days
2	*Adhatoda vasica* L. (Acanthaceae)	Eng : Malbar nut Hin : Adusa Mar : Adalsa	Leaf	Leaf of this plant with methanol or, diethyl ether is ground into paste and extract ointment is applied topically to heal wound	Topical Dosage: once a day for 3 days
3	*Allium cepa* L. (Liliaceae)	Eng : Onion Hin : Pyaj Mar :Kanda	Bulb extract	Onion bulb is ground and extract thus obtained is taken orally to treat wound. It increase collagen and reticulin & tensile strength of treated group	Oral Dosage: 10 ml extract twice a day
4	*Aloe vera* L. (Liliaceae)	Eng : Guarpatha Hin : Dhikawar Mar : Korphad	Leaf	Leaf of this plant is rubbed on the wound. The gel from the leaf has drastric ability to heal wound, ulcer and burns by forming appropriate coating on the affected area	Topical & oral Dosage: little quantity of gel is given orally
5	*Anacardium occidentale* L. (Anacardiaceae)	Eng : Cashewnut Hin : Kaju Mar : Kaju	Fruits	Fruit of this plant, fruit of *Ananus comosus* & rhizome of *Withenia somnifera* are ground with water. The juice thus obtained is taken orally to heal wound.	Oral Dosage: 50 ml of juice thrice a day after food for 2-5 days
6	*Areca catechu* L. (Araceae)	Eng : Betal nut Hin : Supari Mar : Supari	Dried Fruits	Dried fruits are powdered and heated with coconut oil and applied topically on burns until cure.	Topical Dosage: Once a day for 3 days
7	Azadirachta indica L (Meliaceae)	Eng : Neem Hin : Nim Mar : Kadu neem	Leaves, bark & fruits	Leaf, bark and fruits are ground into paste along with powder of rhizome of *Curcuma domestica* and applied topically on affected area to heal wound. The leaf juice is taken orally for instant effect.	Topical & oral Dosage: 20 ml leaf juice twice a day. Paste applied topically
8	*Bauhinia variegata* L. (Caesalpinadae)	Eng : Camel's foot tree Hin : Kachnar Mar :Kachnar	Bark of plant	The bark of this plant is make soft in water and pest is applied on affected area to heal wounds	Topical Dosage: Once a day for 3 days
9	*Calotropis gigantea* (L.) R. Br. (Asclepidaceae)	Eng : Madar milk weed Hin : Madar Mar : Rui	Latex from stem	Few drops of the stem latex are used to treat wounds created by thorns in heels and to remove the thorns from heel (external application).	Topical Dosage: Once a day for 3 days

Table 1: Continued….

Sr. No.	Scientific name	Vernacular name	Plant part(s) used	Method of preparation	Application
10	*Caria papaya* L. (Cariaceae)	Eng : Papaya Hin : Papita Mar :Papai	Fruit & latex of plant	Fruit is ground into paste and is applied topically to heal wound. The latex of papaya is applied to the burn wound using hydrogel as vehicle system	Topical Dosage: Once a day for 3 days
11	*Catharanthus roseus* L. (Apocynaceae) (syn: *Vinca rosea*)	Eng :Periwrinkle Hin : Sadabahar Mar :Sadaphuli	Flowers	Flower of this plant with alcohol is ground and the alcoholic extract thus obtained is taken orally to heal wound	Oral Dosage: 100mg /kg/day for 3-5 days
12	*Cissampelos pareira L.* (Menispermaceae)	Eng :Pareria, Hin : Harjori Mar : Khajoti	Juice from leaves	Juice extracted from the leaf is taken orally along with rice flour to heal wounds soon.	Oral Dosage: 50 ml of juice twice a day before food
13	*Commelina benghalensis* L. (Commelinaceae)	Eng : Spiderwort Hin : Kankawa Mar : Kena	Juice from stem	Juice extracted from the stem is mixed with the stem juice of *Canna indica* and fruits of *Areca catechu*. The mixture is applied topically on affected places to heal wounds.	Topical Dosage: Once a day for 3 days
14	*Curcuma longa L* (Zinziberaceae)	Eng : Turmeric Hin : Haldi Mar : Halad	Rhizome and leaves	Juice of the fresh rhizome is commonly applied to recent wound, buries and leech bites. Rhizome is ground with leaves of *Justicea adhatoda* in cow urine and paste is mixed with ginger oil. The ointment thus obtained is applied topically or rubbed on skin affected area	Topical Dosage: once a day for 4-5 days
15	*Dendrophthoe falcata* (L.f) Etting (Loranthaceae)	Eng : Honey Suckle Mistletoe Hin : Banda Mar : Bandgul	Fresh leaves & stem	Fresh leaf and stem are ground into a paste with water and applied topically on affected places to heal wounds	Topical Dosage: Once a day for 3 days
16	*Euphorbia antiquorum* L. (Euphorbiaceae)	Eng : Square milk hedge Hin : Niwadang Mar : Narasya	Latex from stem	Latex obtained from stem is applied on spots with burn injury. The stem is heated on fire and the juice thus obtained is topically applied on affected places to heal wounds.	Topical Dosage: Once a day for 3 days
17	*Euphorbia hirta* L (Euphorbiaceae)	Eng : Pill bearing spurge Hin : Dudhu Mar : Govardhan	Fresh Leaves & Latex from stem	Fresh latex is applied topically on affected places to heal wounds. Also leaf of this plant, *Acalypha indica*, *Commelina bengalensis*, *Cissampelos pareira* and *Begonia fallox* are mixed and ground into a paste and the mixture thus obtained is applied topically on affected places to heal wounds.	Topical Dosage: Once a day for 3 days
18	*Ficus benghalensis* L (Moraceae)	Eng : Banyan Hin : Bat Mar : Vad	Plant Leaves	Leaf powder is mixed with coconut oil and applied topically on affected places to treat wounds.	Topical Dosage: Once a day for 3 days

Table 1: Continued….

Sr. No.	Scientific name	Vernacular name	Plant part (s) used	Method of preparation	Application
19	*Ixora coccinia* L. (Rubiaceae)	Eng : Jungle flame Hin : Nilkamali, Mar : Karamata	Flowers	Flowers of this plant are mixed with the leaves of *Coldenia procumbens*, *Centella asiatica* and stem bark of *Madhuca longifolia* and boiled with water. The decoction thus obtained is applied topically along with coconut oil on affected places to heal wounds.	Topical Dosage: Once a day for 3 days
20	*Jatropha gossypifolia* (Euphorbiaceae)	Eng : Pignut Hin : Vilayati Yerendi Mar :Lal Bharenda	Resin from whole plant	Resin obtained from this plant is used for mouth wash and to heal wounds in lips and tongue. Dosage: Twice a day for a week.	Topical Dosage: Twice a day for a week.
21	*Lantana camera* L (Verbanaceae)	Eng : Lantana Hin : Ghaneri Mar : Ghaneri	Whole plant	The whole plant parts with water are ground into paste and it is applied topically to heal wound	Topical Dosage: Twice a day for a week
22	*Madhuca indica* L (Sapotaceae)	Eng : Indian butter tree Hin : Mahua Mar Moh	Bark of stem Seed oil	Stem bark of this plant,rhizomes of *Asparagus racemosus*, *Aristolochia indica*, leaves of *Ocimum basilicum* and *Elephantopus scaber*are mixed & boiled with water & the decoction thus obtained is taken orally to heal wounds. Oil extracted from seeds is applied on wound due to snake bite and scorpion sting for instant healing	Oral Dosage: 50 ml decoction twice a day after food for 2-3 days Topical Dosage: once a day for 4-5 days
23	*Morus alba* L. (Moraceae)	Eng : Mulbery Hin : Shahtooth Mar : Janjap	Plant leaves	Leaf of this plant is mixed with the leaves of *Eupatorium odoratum*, *Euphorbia hirta* and *Ficus benghalensis*. This mixture is ground into a paste and applied topically on affected places to heal wounds.	Topical Dosage: once a day for a week.
24	*Musa saientum* L. (Musaaceae)	Eng : Banana Hin : Kela Mar : Kel	Fruit	Ripened fruit of banana is taken that promote the wound healing process due to their astringent and antimicrobial property, results to be responsible for wound contraction and increase rate of epithelialization.	Oral Dosage: 2-3 ripened fruits per day
25	*Ocimum americanum* L. (Lamiaceae)	Eng : Tulsi Hin : Dev Tulsi Mar : Dev Tulsi	Plant Leaves	Leaf is ground into a paste and applied topically on affected places to heal wounds.	Topical Dosage: once a day for a week.
26	*Ocimum basilicum* L. (Lamiaceae)	Eng : Sweet basil Hin : Kali Tulsi Mar :Kali Tulas	Leaves & seeds	Leaf infusion applied tropically to heal wound	Topical Dosage: once a day for a week.
27	*Ocimum sanctum* L. (Lamiaceae)	Eng : Tulsi Hin : Tulai Mar : Tulas	Plant Leaves	Leaf is ground into a paste and applied topically on affected places to heal wounds	Topical Dosage: once a day for a week.

Table 1: Continued….

Sr. No.	Scientific name	Vernacular name	Plant part (s) used	Method of preparation	Application
28	*Pongamia pinnata* (L.) Pierre. (Fabaceae)	Eng : Pongam Hin : Karanj Mar : Karanjee	Oil from seeds	Oil extracted from the seeds is applied topically on affected places to treat wounds.	Topical Dosage: Once a day for 3 days
29	*Pothos scandens* L (Araceae)	Eng : Climbing Arold Hin : Bendarli Mar : Anantwel	Plant leaves	Leaf of this plant is mixed with the fruits of *Capsicum annum* and rhizome of *Allium sativum*. The mixture is ground into a paste with coconut oil and applied topically on affected places to heal wounds created during delivery.	Topical Dosage: once a day for a week.
30	*Rungia repens* (L.) Nees (Acanthaceae)	Eng : Creeping Rungia Hin : Karmor Mar : Ghati	Paste of whole plant	Whole plant is ground into a paste and applied topically on affected places to heal wounds.	Topical Dosage: once a day for a week.
31	*Scoparia dulcis* L (Scrophulariaceae)	Eng : Sweet Broom weed Hin : Mithi patti Mar :Ghoda tulsi	Plant leaves	Leaf is ground into a paste and applied topically on affected places to heal wounds.	Topical Dosage: once a day for a week.
32	*Sesamum indicum* L (Pedaliaceae)	Eng : Gingelly Hin : Til Mar : Til	Plant root	Root of plant with methanol is ground and extract thus obtained was incorporated in gel and ointment bases. The ointment is applied topically to affected areas to heal wound.	Topical Dosage: ointment is applied twice a day
33	*Solanum xanthocarpum* Schard & Wendl (Solanaceae)	Eng : Indian solanum Hin : Bhui ringani Mar : Kateri	Plant leaves	Leaf is ground with water into a paste and applied topically on snake bite affected area to heal wounds.	Topical Dosage: twice a day for a week.
34	*Tectona grandis* L. (Verbanaceae)	Eng : Teak Hin : Sag Mar : Sag	Plant leaves	Leaf is ground with water into a paste and applied topically on affected area. Leaf juice is taken orally to heal the wound.	Oral & topical Dosage: 10 ml leaf juice twice day
35	*Terminalia bellirica* (Gaertn.) Roxb., (Combretaceae)	Eng : Beleric my robaba Hin : Behara Mar : Behda	Fruits of plant	Fruit of this plant, stem barks of *Pongamia pinnata, Toddalia asiatica* & *Pterocarpus marsupium* are boiled with water. Decoction is used to wash the affected places to heal wounds quickly	Topical Dosage: 25 ml of juice is used to wash thrice a day for 2 days.

Table 1: Continued….

Sr.No.	Scientific name	Vernacular name	Plant part (s) used	Method of preparation	Application
36	*Themeda triandra* Forssk (Poaceae)	Eng : Kangaro grass Hin : Buddha Bamboo Mar:BuddhaVedu	Powder of whole plant	Powder of whole plant parts is ground with the leaves of *Toddalia asiatica* and *Pongamia pinnata*. The mixture thus obtained is mixed with coconut oil and applied topically on affected places to treat wounds.	Topical Dosage: twice a day for a week.
37	*Trichodesma zeylanicum* (Burm. f.) R. Br (Boraginaceae)	Eng: Camel Bush Hin :Bichu Mar: Aginbuti	Plant leaves, roots	Fresh leaves are roasted with *Allium cepa* in coconut oil & made into curry. The curry is taken before meal to treat bleeding piles Leaf of this plant, rhizome of *Glycyrrhiza glabra*, stem of *Canna indica* and stem bark of *Punica granatum* are mixed and ground into a paste and applied topically on affected places to heal wounds. Root scraping is used for wound dressing	Oral Dosage: twice daily for 4-5 days Topical Dosage: twice a day for a week
38	*Tridex procumbens* L (Asteraceae)	Eng : Baramasi Hin : Akal kohadi. Kannada, Mar:Kambarmodi	Plant leaves	Leaf is ground into a paste and applied topically on affected places to heal wounds.	Topical Dosage: Once a day for 3 days

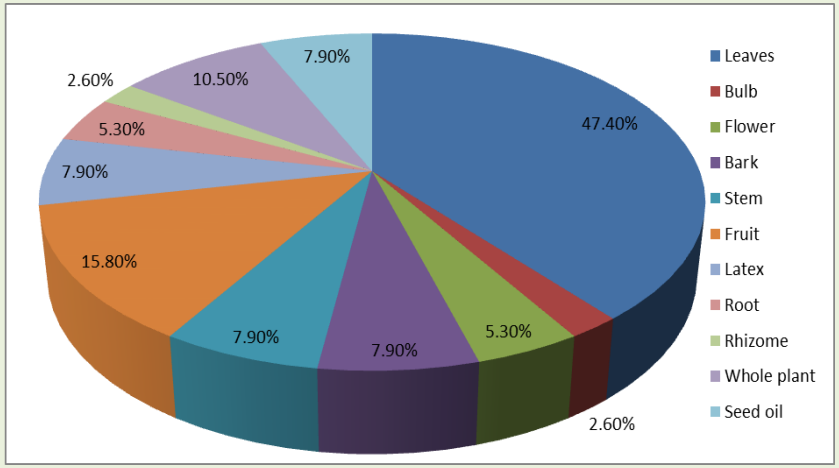

Fig. 1: Percent contribution of plant parts used for wound healing preparation

In Indian system of medicine such as ***Ayurveda, Siddha, Unani and folk medicine,*** about 163 documented plant species were used as wound healing to treat wound and related injuries by most of the tribal communities (Biaswas and Mukherjee, 2003).

The tribal communities of study area were also frequently using plant parts of *Cissampelos pareira, Dendrophthoe falcate, Pothos scandens, Trichodesma zeylanicum, Tridex procumbens, Ficus benghalensis, Morus alba, Scoparia dulcis* and stem latex of *Calotropis gigantea, Euphorbia antiquorum and E. hirta* in the treatment of wounds and other injuries. The aqueous juice preparation from fruits of *Acalypha indica* and *Anacardium occidentale* was orally administrated to heal wound. The paste preparation of powder from dried fruits of *Areca catechu* with coconut oil was applied topically on burns until cure. The remedy prepared from oil of dried seeds of *Pongamia pinnata* helps in wound healing. The resin from *Jatropha gossypifolia* reported to heal wound in lips & tongue and also used for mouth wash. The latex obtained from plant parts particularly stem was found to be the most frequently used plant parts. The latex from stem of *Calotropis gigantea* is used to treat wounds created by thorns in heal and to remove the thorns from heel. Latex from stem of two species of *Euphorbia* (*E. antiquorum & E. hirta*) is used to cure spots of burn injury. The powder of whole plant of *Rungia repens* and *Themeda triandra* with coconut oil applied topically on affected places to heal wound. The oral dosages of decoction preparation in boiled water from stem bark of *Madhuca indica*, rhizome of *Asparagus racemosus, Aristolochia indica*, leaves of *Ocimum basilicum* and *Azadirachta indica, Tridax procumbens* were reported most effective in quick healing wounds and other injuries. The decoction from flowers of *Ixora coccinia* and stem bark of *Madhuca indica* along with coconut oil applied on affected place to heal wound. The ripe fruit of *Musa saientum* promote the wound healing process due to their astringent and antimicrobial property, results to be responsible for wound contraction and increase rate of epithelialization. The decoction from roots of *Sesamum indicum*, fruit of *Caria papaya* and rhizome of *Curcuma longa* applied topically on affected places to heal wound (Rawat, *et al*., 2012).

The process of wound healing is promoted by several natural products which are composed of active principles like triterpenes, alkaloids, flavonoids and biomolecules (Kadhirveli *et al*., 2010). Anthraquinone, catechol, flavonoids, phenolic compounds, saponins, steroids, and terpenoids from *Tridex procumbens* (Jain & Jain 2012), glycosides, flavonoids & saponins from *Commelina sinensis* (Jemilat *et al*., 2010) and Benzene dicarboxylic acid from *Pothos scadens* (Lalithrani *et al*., 2009), phytosterols & glycosides, from *Rungia repens* (Swain *et al*., 2011) were some of the important plant derived wound healing compounds. Terpenes were well reported for bactericidal, fungicidal, antiviral, cytotoxic, analgesic, anti-cancer, spermicidal, anti-allergic activities and also reported for wound healing. The terpene contain α- and β-pinene, the most volatile components, emitted by most of the medicinal plants. The effects of α-pinene vary depending on the composition of monoterpenes and sesquiterpenes hence; there is a growing interest in natural terpenoids in their scientific aspects of extraction and structural analysis (Manjamalai *et al*., 2012). Besides wound healing, solvent extracts from *Tridax procumbens* as well as essential oil have been reported for many significant pharmacological properties such as, anti-microbial, anti-inflammatory, anti-oxidant (Habila *et al*., 2010) and anti-cancer (Prostate Cancer) activities (Vishnu *et al*., 2011). Purnima *et al.,* (2013) stated that polysaccharides were also partly responsible for the process of wound healing. Besides these, aromatic plants have a long history of use for treating wounds; especially essential oils obtained from the various parts of the plants are very effective in treating small to medium wounds, skin abrasions, excoriations, skin infections and other topical health problems provided an appropriate concentration of essential oil was used (Gurib-Fakin, 2006; Agrawal *et al*., 2009). The medicinal properties and major chemical constituents of these plants have also been provided (Table 2).

The leaf extract of *Tridax procumbens L* is being used widely as traditional medicine for healing open wounds due to is greater anti-inflammatory effect. As the essential oil of *Tridax procumbens L* has revealed to have α-pinene, β-pinene l-phellandrene and Sabinene as major bioactive compound to study its preventive/ chemotherapeutic effect (Manjamalani *et al*., 2012).

Table 2: Commonly used wound healing plants, their vernacular names, plant part(s) used, medicinal properties & major chemical compound contents.

Sr. No.	Scientific name, Family & vernacular	Plant part (s) used	Wound & related therapies practiced in folk medicine	Medicinal properties of plants	Major chemical compound of plants
1	*Acalypha indica* L (Acanthaceae) E- Indian nettle H- Kuppi; M- Khajoti	Leaf	Skin diseases, wound, ulcer, fever, scabies	Anthelmintic, anodyne, emetic, bronchitis, cathartic, diuretic, hypnotic, expectorant & purgative	Acalyphin, acalyphamide, acalyphal acetate, aurantiamide, succinimide and flindersin
2	*Adhatoda vasica* L. (Acanthaceae) E-Malbar nut H-Adusa; M- Adalsa	Leaf	Phthisis, piles, chronic bronchitis, asthma, diarrhea, dysentery malarial fever, wound, skin diseases, scabies	Anti-hyperglycemic, anti-diarrheal, anti-convulsing, cytotoxic expectorant, antispasmodic antiseptic, antiperiodic and anathematic	Turgorins, quinazoline derivatives such as vasicine, vasicinone and b-hydroxy vaccine, volatile oil, betalin and vasakin,adhatodic acid
3	*Allium cepa* L. (Liliaceae) E-Onion; H-Pyaj M-Kanda	Bulb extract	Skin diseases, wound, diabetes, ulcer, hypertension, blood clotting, hyperlipidemia	Anti-diabetic, antioxidant, antihypertensive, anti-thrombotic, hypoglycemic, anti-hyperlipidemic, abortifacient	Kampferol, β-sitosterol, ferulica cid, myritic acid, progstaglandins
4	*Aloe vera* L. (Liliaceae) E- Guarpatha (Indian aloe); H-Dhikawar; M-Korphad	Leaf	Wound, insects stings, bruises, acne, blemishes poisoning, welts, eczema, sunburn, stomach & intestinal disorders	Astringen, antimicrobial, blood purifier, anticeptic	Vit-C & E, amino acids, acemannan (β-(1,4)-acetylated polymannose, keratinocyte growth factor-1 and type I collagen), fibroblasts
5	*Anacardium occidentale* L. (Anacardiaceae) E-Cashewnut; H & M-Kaju	Fruits	Arthritis, aches, pains, fever, wounds and inflammations, Skin ulcers	Anthelmintic, astringent, irritant, purgative, rubefacient and vesicant	Cardol, anacardic acid, anacardein, occidentoside, campesterol, β-sitosterol and stigmasterol
6	*Areca catechu* L. (Arecaceae) E-Betal nut; H & M-Supari	Dried Fruits	Wounds and skin Diseases	Anthelmintic, aphrodisiac, astringent, cooling, diuretic digestive & laxative	Arecoline, choline, arecaine, aricaidine, catechu, guvacin and α-catechin
7	*Azadirachta indica* L (Meliaceae) Margosa tree E &H-Neem; M- Kadu neem	Leaves, bark & fruits	Skin diseases, ulcer, cough diabetes, Diarrhea, wound, dysentery, inflammation, leprosy, intestinal worm,	Antispasmodic, antiseptic, antifibrinolytic, diuretic, hepatoprotective	Azadirachtin, Nimbidine, Nimbin, Nimbinine, flavonoids

Table 2 : Continued….

Sr. No.	Scientific name, Family & vernacular	Plant part(s) used	Wound & related therapies practiced in folk medicine	Medicinal properties of plants	Major chemical compound of plants
8	*Bauhinia variegata* **L.** (Caesalpinadae) E- Camel's foot tree H-Kachnar; M-Kanchan	Bark of plant	Skin diseases, ulcer Diarrhea, dysentery leprosy, tumors, wound, inflammation, intestinal worm, pproctoptosis, cough, diabetes, scrofula	Astringent, anthelmintic , alterative, blood purifier & tonic	Quercetin, rutin,quercetin, apigenin, apigenin-7-0-glucoside, flavvones, floxepin
9	*Calotropis gigantea* (L.) R. Br. (Asclepiadaceae) E-Madar milk weed; H-Madar; M-Rui	Latex from stem	Earache, toothache and headache, sprain, stiff joints and pains	Anthelmintic, astringent, depurative, diaphoretic, emetic digestive, luxative expectorant, febrifuge, stomachic & tonic	Calotropin, akundarin, uscharin, calotoxin, calactin, α, β calotrropeol, β-amyrin, giganteol and isogiganteol
10	*Caria papaya* L. (Cariaceae) E-Papaya; H-Papita; M-Popai	Fruit & latex of plant	Skin diseases, ulcer, tumors, wound, inflammation	Astringent, antimicrobial, antispasmodic, anticeptic	Chympopapain A & B, papaya endopeptidase-II & IV, Ω-endopeptidase, chitinase,, protease-inhibitors & proteins
11	*Catharanthus roseus* L. (Apocynaceae) E-Periwrinkle H-Sadabahar M-Sadaphuli	Flowers	Cancer, wound	Astringent, antimicrobial, antispasmodic	Monoterpenoids, alkaloids,tannins, vinblastine, vincristine
12	*Cissampelos pareira L.* (Menispermaceae) E-Pareria; H-Harjori M-Khajoti	Juice from leaves	Skin diseases, abdominal pain and gastric disorders	Antilithic, astringent, Anti-diuretic, sedative, stomachic and tonic	Cissampeloflavone,hyatinin, bebeerines, cycleanin, hyatin, cissampeline, cissampareine, pareirubrines A & B,quercitol
13	*Commelina benghalensis* L. (Commelinaceae) E-Spiderwort; H-Kankawa M- Kena	Juice from stem	Leprosy, conjectural inflammation, Epilepsy insanity exophthalmia	antioxidant, emollient anti-allergic, anti-microbial anti-inflammatory, anti-cancer diuretic, antiseptic.	phlobatannins, carbohydrates, tannins, glycosides, volatile oil , resins, balsams, flavonoids & saponins,
14	*Curcuma longa* ***L*** (Zinziberaceae) E-Turmeric; H-Haldi M-Halad	Rhizome and leaves	Skin disease, ulcer, scrofula, Diarrhea, dysentery, leprosy, wound,cough, inflammation	Anti-microbial, anti-inflammatory, Astringent, fibroblastic.	Vit-A, protein, flavonoids, alkaloids

Table 2: Continued….

Sr. No.	Scientific name, Family & vernacular	Plant part(s) used	Wound & related therapies practiced in folk medicine	Medicinal properties of plants	Major chemical compound of plants
15	*Dendrophthoe falcata* (L.f) Etting (Loranthaceae) E-Honey Suckle Mistletoe H- Banda;M-Bandgul	Fresh leaves & stem	Blood purifier, ulcer, asthma, impotence, paralysis, skin diseases and wound healing	Astringent, asthma, mania, anasthetic	β-amyrin acetate, oleanolic acid, methyl ester acetate, β-sitosterol, stigmasterol, Strospeside, neritaloside and odoroside
16	*Euphorbia antiquorum* L (Euphorbiaceae) E-Square milk hedge H-Niwadang; M-Narasya	Latex from stem	Skin diseases, wound healing	Acrid, anodyne, digestive, emetic, pungent, purgative, rubefaciant, stomachic, thermogenic and vesicant	Euphorbin, euphol, isohelianol and camelliol C
17	*Euphorbia hirta* L (Euphorbiaceae) E-Pill bearing spurge; H-Dudhu; M-Govardhan	Fresh Leaves & stem Latex	Gastro-intestinal and respiratory disorders Effects)	Colic and bronchitis	Euphorbia A & B, rutin, gallic acid, quercitrin, l-inositol, kaempferol, and xanthorhamin
18	*Ficus benghalensis* L (Moraceae) E-Banyan; H-Bat; M-Vad	Plant Leaves	Inflammations and bone fracture, Inflammation of Skin,wounds, fibrositis, Lymphadenitis & sprains	Astringent, acrid, anodyne, antiemetic, cooling, diaphoretic, depurative, refrigerant	Bengalenoside, leucocyandin, perlargonidin, leucopelargonin, leucodelphinidin derivatives, caoutchouc and tannins
19	*Ixora coccinia* L. (Rubiaceae) E-Jungle flame; H-Nilkamali, M-Karamata	Flowers	Ulcers and Inflammations	Astringent, acrid, antiseptic, bronchitis, digestive, sedative carminative, & febrifuge	Lupeol, fatty ester, ursolic, oleanolic, stearic,oleic, linoleic acids and sitosterol
20	*Jatropha gossypifolia* L (Euphorbiaceae) E-Pignut H-Vilayati Yerendi M-Lal Bharenda	Resin from whole plant	Gastro-intestinal irritation, pain, burning sensation in throat, nausea, vomiting, diarrhea	Emmenogogue and purgative	Jatrophenone, ricinoleic acid hydroxyjatrophone A, B, C, gadain, prasanthaline, isogadain, cyclogossine A, coumarino-lignoid
21	*Lantana camera* L (Verbanaceae) E-Lantana; H & M-Ghaneri	Whole plant	Inflammation, skin diseases, wound, ulcer	Astringent, antimicrobial, wound healing	Saponine , tannins, triterpenes, alkaloids, flavonoids

Table 2: Continued….

Sr. No.	Scientific name, Family & vernacular	Plant part(s) used	Wound & related therapies practiced in folk medicine	Medicinal properties of plants	Major chemical compound of plants
22	*Madhuca indica* L (Sapotaceae) E-Indian butter tree; H-Mahua; M-Moh	Bark of stem, seed oil	Inflammationsand bone fracture,Inflammation of skin wounds, fibrosis Lymphadenitis & sprains	Astringent, anthelmintic, aphrodisiac, diuretic, emollient, bitter, laxative, bronchitis & refrigerant	Mowrin (a sapo-glucoside), mimusopside A, Mi-saponins A, B, & C, 3-O-beta-D-glucopyranosyl protobassic acid
23	*Morus alba* L. (Moraceae) E-Mulbery; H-Shahtooth M-Janjap	Plant leaves	cleansing throat, cooling agent, astringent, laxative, anthelmintic & purgative	Astringent, anthelmintic, aphrodisiac, diuretic, diaphoretic, emollient, laxative and purgative	Mulberroside A, moron A, mulberrifurans, kuwanol B, kuwanons , moracenin , cis-mulberroside A, quercetin, isoquercitrin, astragalin, scopolin, skimming & roseoside II,
24	*Musa saientum* L. (Musaaceae) E-Banana; H- Kela; M-Kel	Fruit	Skin diseases, ulcer, excision, incision	Astringent, antimicrobial	Flavonoids(lecucyanidin), sterylacyl glycosides, sitoindisides I-IV
25	*Ocimum americanum* L. (Lamiaceae) E-Tulsi; H-Dev Tulsi M-Dev Tulas	Plant Leaves	Skin diseases, eczema, epidermal infection, wound, inflammation	Antiviral, antioxidant, antifungal,I nsecticidal, alagesic,anti-inflammatory, antibacterial, wound healer	Thymol, p-cymene, 2-phenoxy-ethyl propionate, 1,8-cineole, cis-transpiperitol
26	*Ocimum basilicum* L. (Lamiaceae) E-Tulsi; H-Kali Tulsi M-Kali Tulas	Leaves & seeds	Skin infection, cold & cough, nausea, rhinitis, snake bite, vermifuge	Antispasmodic, detoxifier, anti-inflammatory, adaptogen, sedative, anesthetic, hypnotic, anticonvulsant, antioxidant, diaphoretic, anticatarrhail,	Linalool, epi-α-cadinol, bergamotene, γ-cadinene, alkaloids, saponins. Terpenes, caryophyllin, traces of vit-C, acids (citric , tartaric, malic)
27	*Ocimum sanctum* L. (Lamiaceae) E-Tulsi; H-Tulsi;M-Tulas	Plant Leaves	Cold, cough, headache, flu, colic pain, sore throat, bronchitis,asthma, hepatic hepatic diseases, malarial fever, antitode for snake bite, skin diseases wound, night blindness, diarrhea & influenza	Antioxidant, antifungal, antiulcer, anti-ulcerogenic,	Sesquiterpine, , hydrocarbons, phenolics, cirsilineol, circimaritin, isothymucin, ursolic acid, apigerin, lacteolin, orientic, molludistin rosameric acid, egenol, monoterpenes(bornyl acetate, β elemene,neral, α- & β-pinenes, camphene, campesterol, cholesterol, stigmasterol & β-sitosterol

Table 2: Continued….

Sr. No.	Scientific name, Family & vernacular	Plant part(s) used	Wound & related therapies practiced in folk medicine	Medicinal properties of plants	Major chemical compound of plants
28	*Pongamia pinnata* (L.) Pierre. (Fabaceae) E-Pongam; H-Karanj M-Karanjee	Oil from seeds	Wounds, inflammations, piles, ulcers and rheumatism	Anthelmintic, alexetetic, acrid, carminative, styptic depurative, digestive, haematinic & luxative	Pongamol, karanjin, glabrin, pongal, pongarotene, kanjone pongapinnol, pongapinone , conrauinones, pongaflavone, , pongaflabol ,isopongachromene, and karanjachromene
29	*Pothos scandens* L (Araceae) E- Climbing Arold H-Bendarli; M-:Anantwel	Plant leaves	Skin diseases, epilepsy, poison bite, wound and rheumatism	Anti-inflammatory antiarthritic. antioxidant Leaves cure convulsions & epilepsy. Stem with camphor cure asthma. Plant is used for hysteria and snake-bite	Benzenedicarboxylic acid, Diisooctylestr, n- Hexadecanoic acid Octadecatrienoic acid, Octadecanoic acid Phytol Octadecadienoic acid. Dodecanoic acid, tetradecanoic acid, Octadecaadienoic acid Benzenedicarboxylic acid,, Dodecanoic & Tetradecanoic acid
30	*Rungia repens* (L.) Nees (Acanthaceae) E-Creeping Rungia H-Karmor; M-Ghati	Paste of whole plant	Wound, inflammation, diuretic	Analgesic antipyretic, diuretic, and antifungal.	Carbohydrates, amino acids, fixed oils, phytosterols, glycosides, tannins and phenolic compounds.
31	*Scoparia dulcis* L (Scrophulariaceae) E-Sweet broom weed H-Mithi patti; M-Ghoda tulsi	Plant leaves	Diabetes, warts, fever dysentery, headache, jaundice, snake bite, stomach pain, skin diseases, toothache	Emetic	Amellin (antidiabetic), scoparic acid-A, B& C, scopadulic acid-A &B, scopadulin, scoparinol, friedelin & glutinol
32	*Sesamum indicum* L (Pedaliaceae) E-Gingelly; H & M- Til	Plant root	Skin diseases, wound,	Antioxidant, antimicrobial, antifungal, anti-inflammatory, wound healer	Flavonoids, sesamin, sesamol
33	*Solanum xanthocarpum* Schard & Wendl (Solanaceae) E-Indian solanum; H- Bhui ringani; M-Kateri	Plant leaves	Bronchitis, asthma, fever, lumbago, pain, piles, thirst, urinary & heart diseases, gonorrhea, sore throat, skin diseases, diuretic	Antifungal, anticancer,, snail-killing activity, anti-allergic, anti-inflammatory, antifertility agent, wound healer	Alkalkids, sterols, saponins, flavonoids, glycosides, Solasodine, diosgenin, tomatiolenol, linoleic acid, oleic acid steargic acid,α-solsmargine

Table 2: Continued….

Sr. No.	Scientific name, Family & vernacular	Plant part(s) used	Wound & related therapies practiced in folk medicine	Medicinal properties of plants	Major chemical compound of plants
34	*Tectona grandis* L. (Verbanaceae) E-Teak; H-Sag; M-Sagwan	Plant leaves	Skin diseases, ulcer, burn injuries inflicted wound	Antiseptic, Anti-inflammatory, wound healer,	Carnbohydrae, tannins, anthraquinone glycosides
35	*Terminalia bellirica* Roxb (Combretaceae) E-Beleric myrobaba H-Behara; M-Behda	Fruits of plant	Cardio tonic in angina and employed in poor coronary circulation	Astringent, antipyretic, bitter, expectorant, luxative, purgative & tonic	Gallo-tannic acids, termilignan, thannilignan, triterpenes, sterols and phenolics
36	*Themeda triandra* Forssk (Poaceae) E-Kangaroo grass; H-Buddha Bamboo; M-BuddhaVedu	Powder of whole plant	Skin diseases, wound healing	Anti-inflammatory antiarthritic. antioxidant	conrauinones, pongaflavone, sterols and phenolics
37	*Trichodesma zeylanicum* (Burm. f.) R. Br (Boraginaceae) E-Camel Bush H-Bichu; M-Aginbuti	Plant leaves, roots	Emollient, piles, stomach ailments, indigestion,itching, coughing, wound & skin infection	Antimicrobial, antitumour, antiviral, anti-inflammatory, cardiotonic, contraceptive, antiplatelet, wound healing, prostaglandin inhibitory	Pyrrolizidine alkaloids, _-amyrin, b-sitosterol, hexacosane, hexacosanoic acid
38	*Tridex procumbens* L (Asteraceae) E-Baramasi H-Akal kohadi. Kannada, M-Kambarmodi	Plant leaves	Wound, inflammation, cancer, allergy,	Hepatoprotective, immunomodulative, antioxidant antidiabetic, antimicrobial, anti-inflammatory,	Anthraquinone, catachol, flavonoids, phenolics, saponins, steroids, tannins and terpenoids.

Photographs of some selected medicinal plants used by adiwasi tribal for wound healing

Acalypha indica

Euphorbia hirta

Ficus benghalensis

Anacardium occidentale

Ixora coccinia

Jatropha gossypifolia

Tridax procumbens

Commelina benghalensis

Dendrophthoe falcate

Moreover, besides wound healing, aqueous extract of *Azadirachta indica* have been reported for many important pharmaceutical properties such as anti-microbial, anti-inflammatory, Antiseptic, anti-plasmodic, hepato-protective and anti-diuretic due to high content of *azadirachitin*. It is used to cure ulcer, cough, diabetes, dysentery, diarrhea, intestinal worm & leprosy (Rawat et al., 2012)

CONCLUSION

The present study revealed that traditional herbal medicines are still in common use by adiwasi & rural population of village *Kanholi - Pohi dam - Salaidabha* belong to Hingna taluka of district Nagpur. Thus the study ascertains the value of a great number of plants used in herbal medicine especially in wound healing which could be of considerable interest in the development of new drugs. The ethnomedicinal information about plants to treat various ailments including wounds is still unknown. Moreover, traditional knowledge of herbal medicine is disappearing which need to be conserved. The comprehensive evaluation on the plants with wound healing activity on the basis of traditional medicine may possibly give base line information for the pharmacists and chemists to invent new compounds that may be used as prominent drugs in wound healing. This is one of the steps undertaken towards the documenting treasures of indigenous knowledge upon the wound healing property of medicinal plants. Thus, concluded that survey, identification and projection of the traditional medicinal plants used by tribal communities as herbal medicine in wound and related therapy especially of Indian origin which have potential to emerge as modern drug substitutes.

ACKNOWLEDGEMENT

The author thanks all those villagers who have helped in providing the ethnomedicinal information. The author also gratefully acknowledges the facilitation of this work by Principal, Jawaharlal Nehru Mahavidyalaya, Wadi, Nagpur, Dr. R.P. Thakre, Ex- Professor and Prof. & Head, P.G. Deptt. of Botany, RTM, Nagpur University, Nagpur

REFERENCES

Agrawal PK, Singh AK, Caurav K, Goel S, Khanna HD and K Goal (2009) Evaluation of wound healing activity of extracts of plantain banana (*Musa sapientum* var. *paradisiaca)* in rats. *Ind. J. Exp. Bio*., 17(1): 32-40.

Biaswas TR and B Mukherjee (2003) Plant medicines of Indian origin for wound healing activity : A Review Lower Extr Wounds, **2** :25-39.

Gupta VK and Vikrant Arya (2011) A review on potential diuretics of Indian Medicinal Plants. Journal of Chemical. *Pharma. Research,* 3(1) : 613-620.

Gurib-Fakin A (2006) Review – Medicinal Plants. Tradition of yesterday and drugs of tomorrow. *Mol. Asp. Med,.* 27 : 1-93.

Habila JD, Bello IA and AA Dzikwi (2010) Total phenolics and antioxidant activity of *Tridax procumbens L*. *African Journal of Pharmacology*, 4, 123-126.

Jain Ankita and Amita Jain (2012) *Tridex procumbens* L.: A weed with immense medicinal importance: A Review. *International Journal of Pharma & Bio. Sciences.* 3(1) : 544-552.

Jemilat IA, Egharevba V and H Omorgie (2010) Pharmacognostic and phytochemical analysis of *Commelina benghalensis* L. *Ethnobotanical leaflets*, 14 : 610-615.

Kadhirveli K, Ramya S, Palin Sathya Sudha T, Veera Ravi A, Rajasekaran C, Vanitha Selvi, R and R Jayakumararaj (2010) Ethnomedicinal survey on plants used by tribals in Chitteri Hills. Environ. We *Int. J. Sci. Tech*, 5 : 35-46.

Lalithrani S, Mohan VR, Regini GS and Kalidass (2009) GC-MS analysis of ethanolic extract of *Pothos scadens* leaf. *Journal of Herbal Medicine & Toxicology,* 3(2): 159-160.

Manjamalai A, Mahesh Kumar MJ and VM Berlin Grace (2012) Essential oil of *Tridax procumbens* L. Induces apoptosis and suppresses angiogenesis and lung metastasis of the B16F-10 cell line in C57BL/6 mice. *Asian Pacific Journal of Cancer Prevention*, 13:5887-5895

Purnima K, Yadav P, Verma PR, Kumar S and A Arya (2013) A review on wound healing properties of Indian medicinal plants. *Indian Journal of Fundamental and Applied Sciences*, 3(1): 220-232

Rawat R, Singh R, Thakur P, Kaur S, and A Semwal (2012) Wound healing agents from medicinal plants: A Review. *Asian Pacific Journal of Tropical Biomedicine,* S1910-S1917.

Sharma Y, Jabalan G and R Singh (2013) Potential wound healing agents from medicinal plants: A Review *Pharmacologia*, 4: 349-358.

Swain SR, Sinha, BN and RN Murthy (2011) Comparative evaluation of anti-pyretic and analgesic activities of *Rungia repens* and *R. pectinata* L. *Asican . Pharma & Critical Res*., 4(2) : 103-106.

Ugemuge (1976) Flora of Nagpur District. Ph.D. Thesis R. T. M, Nagpur University, Nagpur.

Vishnu Priya, Radhika K and R Sivakumar (2011) Evaluation of Anti-cancer activity of *Tridax procumbens* flower extracts on PC3 Cell Lines. *International Journal of Advance Pharma Science*, 2, 28-30.

Cite this article as: Bhajbhuje MN (2013) Ethno-medicinal survey for wound healing plants from rural areas of Nagpur. *Int. J. of Life Sciences,* 1(2):93-109

Source of Support: Nil, **Conflict of Interest:** None declared