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Innovative Practices of Medicinal Uses of Cultivated Garden Plants by the Peoples of Purba Medinipur District, West Bengal.

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ABSTRACT

Long being inhabitant of the district of Purba Medinipur, West Bengal, it has the scope of study and to know about the different uses of some newly introduced cultivated garden plants as medicinal uses. The medicinal uses are the new information and thus here being presented as new data as well as additional medicinal uses of these plants and plant parts as provided by some gardeners and nursery men. Of course, many of these plants are well known for their medicinal properties and uses as recorded in different literatures. All these plants are mostly the garden annuals or some are perennials. The local inhabitants or the people are considering these plants mostly for external uses for the remedial measures of their different ailments or diseases which are more commonly related to minor cut, fresh cut, injury, bleeding, pains, wounds, headache and inflammation or swelling, etc. It is, further, seen that in most cases the leaves are used as remedial purposes. The additional medicinal uses are provided for 13 plants and these are *Aerva javanica*, *Agave sisalana*, *Ageratum haustonianum*, *Ayapana triplinervis*, *Barleria lupulina*, *Calendula officinalis*, *Catharanthus roseus*, *Celosia argentea*, *Coleus hadiensis*, *Eryngium foetidum*, *Stachytarpheta jamaicensis*, *Tagetes erecta* and *Talinum portulacifolium*. Photographs are provided to facilitate the identity of these plants. Moreover, a brief description along with habit and habitat conditions are mentioned.

Introduction : The indigenous plants have the history of their therapeutic uses for human being as well as for the veterinary medicines due to their properties of chemical constituents having active physiological effects against different ailments. The inventory of these medicinal uses are from the time immemorial due to the effectiveness of herbal drugs to the patients who used the local therapy as satisfied with such treatment and get the remedy and relief without

any bad effects. Thus the trials and errors are going on to select the suitable herbal drugs to prevent diseases and to gain healthy life span.

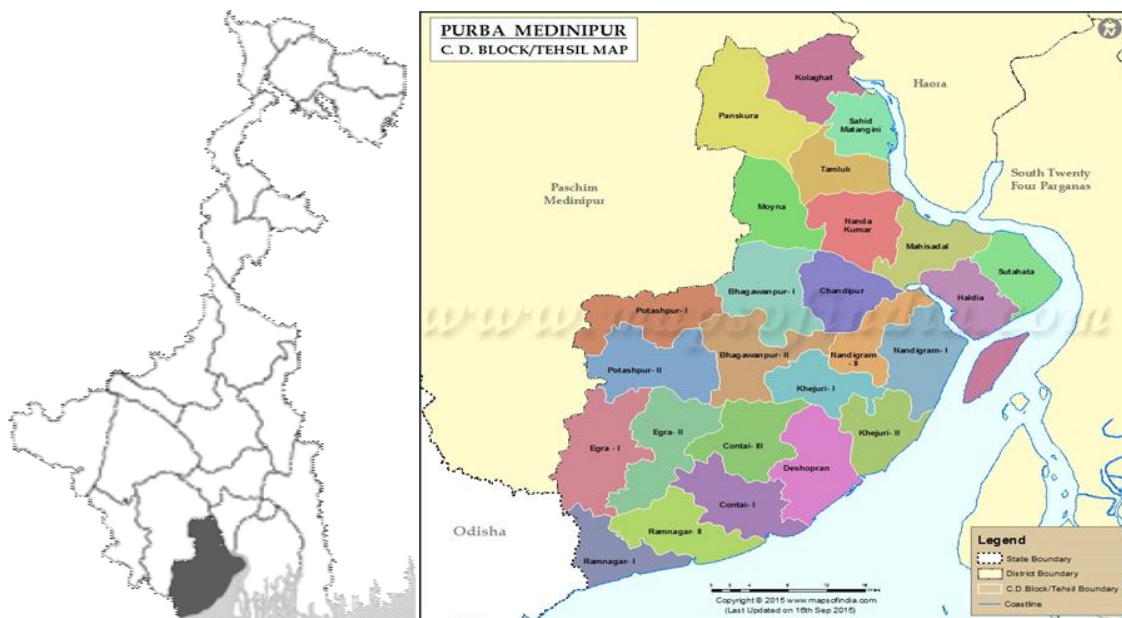
Now a days, besides the known medicinal plants people have the innovative practices to get more and more herbal plants for their daily uses for satisfactory healthcare. Local peoples by their trial and error are with the aim to evaluate the properties of some of the plants which are not indigenous to our country and rather introduced

and under cultivation in gardens. All these plants are available as being regularly cultivated in gardens. Thus the easy availability and evaluation both have taken up by the human being. Moreover, the local people have already made the cultivation at least without any harm and bad effects to use or apply these plants. On the other hand the plants have the beneficial effects or remedial effects as being used. The men of Purba Medinipur district, West Bengal are mostly engaged in cultivation of major crop as rice and then the vegetables and betle vine. The gardening is mostly done as a commercial basis for the production of flowers and foliage and to sell them in a commercial basis. So the nurseries are developed to raise newly cultivated plants in their gardens. Thus with the availability of these exotic plants the men have the scope to study and to use these garden plants in various ways. The acquired knowledge is, therefore, transmitted amongst the local people and gradually the men are using these plants. Most of these garden plants are exotic and many of them are used as external application as their remedial measure or treatment. A few plants are taken for internal uses. So, new inventory or the additional information of medicinal uses of some cultivated garden plants are here provided that have been known from the local people of Purba Medinipur district, West Bengal.

Objective: This study is undertaken with an idea to add some additional information about the garden plants, most of them are exotic, particularly for any medicinal purpose besides their commercial values as regular trades in the

markets. This work was initiated as being known to use some plants and plant parts by the nursery men while working in the field suffering from cold and cough and particularly the head-ache and with certain cut or injury with bleeding. Thus with the visit and quiry in many of the gardens for nearly four years many of the information are gathered and aimed here to make documentation of these uses as the innovative practices of local peoples to use exotic garden plants in Purba Medinipur district, West Bengal. Besides the present documentation a details of the previous information of all these plants were also incorporated to compare the present uses and practices with that of the previous ones.

Study Area : Purba Medinipur district, West Bengal is located at the south end of the state covering an area of 4736 sq. km. situated at 87.77 East longitude and 21.93 North latitude. The district is highly populated with 1100 per sq.km. and most of the areas are with the cultivated area besides a few industrial area and small township. Besides the major cultivation crops as rice and other vegetables, there are some specific pockets where the people are with the major practice of gardening and nursery. The study area is confined to work in different major localities like Contai, Tamluk, Haldia, Chandipur, Panskura, Mayna, etc. of Purba Medinipur district, West Bengal. Many times studies had been done in the localities of Panskura and Mayna, and then Tamluk areas where there are more nurseries for regular cultivations of various garden plants throughout year. However, maximum information are



gathered from Chandipur.

The studied areas can be found in Map below.

Field Survey: No specific and regular routine survey was conducted but during the collection trip and visits to different locations of the different blocks and some private gardens and nurseries, the uses of these exotic garden annuals/perennials were known and recorded from 2016 – 2019. The information for medicinal uses were gathered as provided by the local people and mostly by the owners of these gardens and nurseries, as presented in Table A. Some of these plants are very common in our residential localities of Haldia, Tamruk, Contai, Chandipur, Panskura, Mayna, etc. and the plants are also available as grown by the villagers and gardeners. Many of the plants as *Ayapana triplinervis*, *Aerva javanica*, *Calendula officinalis*, *Catharanthus roseus*, *Celosia argentea*, *Coleus hadiensis*, *Eryngium*

foetidum, *Stachytarpheta jamaicensis* and *Tagetes erecta* are very common in these gardens.

Materials and Methods: All total 13 exotic garden plants have been studied and the information of their respective uses are hereby presented. The identity of each plant is confirmed by study of life specimen matching with different books and literatures as Bose *et al.* (1991), Anonymous (2004), Santhosha and Kar (2017), Chadha (2009), Heywood (1978), Staples and Harbst (2005) and Bose *et al.* (2006-2009). For each plant the presently accepted correct botanical name, synonyms/basionyms, if present, and the respective family names are provided. The local names in Bengali, with a few of Hindi and English are given. The native place and the distribution and occurrence are also provided for each plant. A short description, specially the vegetative features, a few floral

TABLE - A
INFORMATION GATHERED ON MEDICINAL USES FROM PERSONS OF THEIR
RESPECTIVE LOCALITIES

Names of plants	Locality	Information provided by (Names of persons)
<i>Aerva javanica</i> <i>Tagetes erecta</i>	Contai	Mr. Kanai Ghorai
<i>Agave sisalana</i> <i>Barleria lupulina</i> <i>Eryngium foetidum</i> <i>Stachyterpheta jamaicensis</i> <i>Talinum portulacifolium</i>	Chandipur	Mr. Nani Gopal Maiti
<i>Ayapana triplinervis</i> <i>Catharanthus roseus</i> <i>Celosia argentea</i>	Haldia	Mr. Sudam Pradhan
<i>Ageratum haustonianum</i> <i>Celosia argentea</i> <i>Coleus hadiensis</i>	Tamluk	Mr. Gourhari Bhoumik
<i>Calendula officinalis</i> <i>Tagetes erecta</i> <i>Catharanthus roseus</i>	Panskura	Mr. Tapan Kumar Jana Mr. Kalyan Maiti Mr. Saroj Kumar Maiti
<i>Calendula officinalis</i> <i>Tagetes erecta</i>	Mayna	Mr. Adhir Chandra Sahoo

characters and the mode of propagation are given. All these information have represented in table format. Photographs are provided to facilitate the identity of the plants.

The information of medicinal uses were gathered through oral interview about the plants used for the treatment of various diseases and ailments. The preparation of medicines, systems of uses, doses, duration and other ingredients as well as applications were thoroughly known from some men and gardeners and recorded (Table A). Under observation the uses, particularly for medicinal purposes, are

discussed in brief with proper references, without going through the chemical constituents and properties.

The present observations as additional information to medical uses are provided in each case as new inventory to these plants.

Observation and Results: The results of studied plants are stated below arranged in alphabetical sequence. The plant parts and their respective uses are provided along with the previous records or information of medicinal uses as mentioned in some recent literatures or books related to these plant species.

Table-1

1. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Aerva javanica</i> (Burm. f.) Juss. ex Schultes, Syst. Veg. ed. 15,5:565.1819. Basionym :<i>Irsenia javanica</i> Burm.f., Fl. Ind.217.1768 Synonym: <i>Aerva tomentosa</i> Forsk. Family :Amaranthaceae(Pl. I, Fig. 1) Local names: <i>Lal gand, Lal bishallakarani</i> in Bengali. Native country: South-East Asia</p>	<p>Perennial herb, 60-80 cm. Stems and branches terete, purple-red. Leaves simple, oblong to oblong-spathulate, 2-3 cm long and 1-1.5 cm wide, acute to acuminate, entire, hairy. Flowers small, aggregated in spike, dull white while blooming in November to March. Grows as garden escape and hedge.</p>

Table-2

2. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Agave sisalana</i> Perrine in U.S. Senate Docum. 300:36.1836. Synonym: <i>Agave rigida</i> Mill.var. <i>sisalana</i>Englm. Family : Agavaceae.(Pl. I, Fig. 2) Local names: <i>Kiya, Keya, Tiya</i> in Bengali and sisal in English. Native country: West Panama, Caribbean Islands and Venezuela.</p>	<p>Plant shrub, almost stemless, having many rosette leaves. Leaves spiral, linear-lanceolate, 50-70 cm long and 10-15 cm wide, spinous at apex and almost entire along margin, very strong and thick, somewhat concave, bluish-green in colour. Flowers profuse in various fasciculate branches, white, usually not forming fruits but forming numerous propagules with parthenocarpic growth as sterile pentaploid (2n = 150). Flowering is less often found, blooming during November to March whenever present in case of very aged plants.</p>

Table-3

3. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Ageratum haustonianum</i> P.Mill., Gard. Dict. Ed. 8.1768. Synonym: <i>A. mexicanum</i> Sims. Family : Compositae (Asteraceae).(Pl. I, Fig. 3) Local names: <i>Uchunti, Dochunti, Kukursoka</i> in Bengali. Native country: South-East Mexico to Central America.</p>	<p>Annual, much branched herb, usually 30-50 cm high, pubescent. Stems and branches terete, more compactly pubescent or hairy. Leaves opposite, simple, ovate-cordate, 5-7 cm long and 4-6 cm wide, acute at apex and serrate along margin. Flowers in homogamous capitula; florets blue with more exerted stigma. The flowers appear during October to March. Grows as garden escape, hedge.</p>

Table-4

4. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Ayapana triplinervis</i> (Vahl) R.M. King & H. Robinson in Phytologia 20:212.1970. Basionym: <i>Eupatorium triplinerve</i> Vahl, Symb. Bot. 3:97.1794. Synonym: <i>E. ayapana</i> Vent. Family : Compositae (Asteraceae). (Pl. I, Fig. 4) Local names: <i>Ayapan</i> in Bengali and <i>Ayapana</i> in English. Native country: Brazil.</p>	<p>Perennial, branched, decumbent herb, often forming suckers. Stems and branches often purple-green. Leaves opposite, simple, lanceolate, 8-12 cm long and 1.5-2 cm wide, acute, entire, prominently 3-veined, greenish-purple, or copper-green in colour. Flowers in homogamous capitulum (head) , borne in lax, branched terminal and axillary peduncles; florets many, purple or pinkish. Flowering during August to February. Grown as hedge plant.</p>

Table-5

5. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Barleria lupulina</i> Lindl., Edwards's Bot. Reg. 18:t.1483.1832. Family : Acanthaceae. (Pl. I, Fig. 5) Local names: <i>Bishalyakarani</i>, <i>Kanta bishalyakarani</i>, <i>Ban-bajra-danti</i> in Bengali. <i>Native country</i>: Tropical Africa and Malagasy.</p>	<p>Plant perennial branched shrub, 1 to 1.5 m high. Stems and branches tetragonal, slightly swollen at nodes. Leaves opposite decussate, simple, linear-oblong, 10-13cm long and 1-1.5cm wide, acute at apex, entire, glabrous on both the surfaces, copper-green with reddish mid-vein, glaucous. Flowers yellow, borne in both axillary and terminal cymes, thyrsoid, with spines and compact green bracts and bracteoles. Flowering is mostly from March to August. Grows as garden plants.</p>

Table-6

6. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Calendula officinalis</i> L. , Sp.Pl. ed. 1:921.1753. (Pl. I, Fig. 6) Family : Compositae (Asteraceae). Local names: <i>Calendula</i> in Bengali, <i>Zergul</i> in Hindi, Scotch Marigold, Pot Marigold or even Marigold in English. <i>Native country</i>: Mediterranean region.</p>	<p>Plant a small annual herb, usually 50 cm. high, finely hairy. Stems terete. Leaves simple, somewhat rosette, spatulate, 10-16 cm long and 3-6 cm wide, obtuse at apex, entire along margin, dull green in colour, juicy. Flowers borne in heterogamous capitula (head); involucre bracts many; ray florets many, variously coloured from yellowish to orange, saffron or even light reddish. The plant flowers during January, February as garden annual and is propagated by seeds (cypselar fruits).</p>

Table-7

7. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Catharanthus roseus</i> (L.) G.Don, Gen, Syst. 4:95.1837. Basionym: <i>Vinca rosea</i> L. , Syst. Ed. 10:944.1759. Synonym: <i>Lochnera rosea</i> (L.) Reichb. (Pl. II, Fig. 1) Family Apocynaceae. Local names: <i>Nayantara</i> and <i>chirabasanta</i> in Bengali, <i>Sadabahar</i> in Hindi, <i>Nityakalyani</i> in Sanskrit, Periwinkle, Old maid, Cayenne jasmine in English. <i>Native country</i>: Malagasy.</p>	<p>Plant an erect branched undershrub or herb, attaining to 60 cm. high. Stems and branches tetragonal, glabrous. Leaves opposite-decussate, simple, oblong, 4-7 cm long and 2-2.5 cm wide, obtuse to acute at apex, entire, glabrous and glossy-green. Flowers usually in pair, axillary cyme, with 2-2.5 cm long corolla tube and 1.5-2 cm long twisted and then spreading corolla lobes (salver-shaped), mostly pinkish, to variously pinkish red and white coloured. Fruits a pair of follicle, narrow, 3-4 cm. long, few-seeded. Flowering is throughout the year.</p>

Table-8

8. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Celosia argentea</i> L. , SP.Pl.ed.1:205.1753. Family : Amaranthaceae. (Pl. II, Fig. 2) Local names: <i>Morog phul</i>, <i>Mayur sikha</i> in Bengali, Foxtail Amaranth in English. <i>Native country</i>: Tropical Africa (Staples and Herbst, 2005).</p>	<p>Erect branched annual herb, to 1 m. high or sometimes even more longer. Stems and branches terete-striate. Leaves alternate, simple, lanceolate to ovate-lanceolate, very variable in size, to 15 cm long and 10 cm wide, acute, entire. Flowers numerous, borne in both terminal and axillary spikes; light pink to reddish coloured, with scaly perianth. The plant flowers during winter but may be continued to April. Plants of both tetraploid (2n=36) and octaploid (2n=72). Grown in garden.</p>

Table-9

9. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Coleus hadiensis</i> (Forssk.) A.J.Paton, Phyto-Keys 129:54.2019. Basionym: <i>Ocimum hadiensis</i> Forssk Fl. Aegypt-Arab.109.1775. Synonym: <i>Coleus barbatus</i> Benth.; <i>C. forskohlii</i> Briq.; <i>Plectranthus barbatus</i> (Benth.) Spreng.(Pl. II, Fig. 3) Family : Labiatae (Lamiaceae). Local names: <i>Coleus</i>, <i>Pathar chur</i> in Bengali. Native country: Western Asia, Arabia.</p>	<p>Plant a perennial, aromatic, decumbent, branched herb, villous throughout. Roots tuberous, thick, found in fascicles, 10-15 cm long and 1.5-2 cm thick, fusiform or straight, aromatic, fleshy. Stems and branches tetragonal. Leaves opposite-decussate, simple, cordate, 8-12 cm long and 5-8 cm wide, acute, crenate, very thick, fleshy, villous. Flowers bluish, irregular, bilabiate, borne in verticillaster in a terminal inflorescence rachis. Flowering August to April. Grown as garden plant.</p>

Table-10

10. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Eryngium foetidum</i> L. , Sp.Pl.ed.1:232.1753. Family : Umbelliferae (Apiaceae),(Pl.II, Fig. 4) Local names: <i>Bilayeti dhaney</i>, <i>Bilati dhaneypatain</i> Bengali and Eryngo, Culantro, Saw Leaf Herb, Thorny coriander in English. Native country: Tropical South America and Caribbean Islands. Now cultivated in Asia including India (Devi <i>et al.</i>, 2016) and also cultivated in kitchen garden of West Bengal (Santhosha and Kar, 2017).</p>	<p>Plant more or less dichotomously branched, decumbent, aromatic herb, often biennial, perennial. Stems and branches terete, glabrous. Leaves radical ones rosette, few, oblong, 12-18 cm long and 1.5-2.5 cm wide, acute, serrate-dentate and spinescent, somewhat soft, light green; cauline leaves ovate-lanceolate to oblong-lanceolate, smaller, to 3 cm long and 1 cm wide. Flowers in small sessile axillary heads, many, very small, whitish green. Fruits mericarp, small. Plant flowers during August to December.Grown in kitchen garden.</p>

Table-11

11.Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Stachytarpheta jamaicensis</i> (L.)Vahl., Enum.1:206.1804. Basionym: <i>Verbena jamaicensis</i> L., Sp.Pl.ed. 1:19.1753. Synonym: <i>Stachytarpheta indica auct.non</i> Vahl; <i>S. urticaefolia</i> (Salisb.) Sims.(Pl. II, Fig. 5) Family : Verbenaceae. Local names: <i>Jarbas</i>, <i>Jarbo</i> and <i>Jalageli</i> in Bengali (Bangladesh) and <i>Kalobhramar</i> in Bengali (Purba Medinipur), Devil's coach whip, Blue make weed, Brazilian Tea in English. Native country: Trinidad and Tobago (Singh, 2006)</p>	<p>Perennial branched undershrub, attaining usually to 1 m or so. Young branches tetragonal. Leaves opposite, simple, ovate, 3-4 cm long and 2.5-3.5 cm wide, acute, serrate, rugose with depressed veins, deep green, petiolate. Flowers many, borne in 20-30 cm long slender inflorescence rachis as spike of both terminal and axillary; bluish, irregular, somewhat bilabiate. Plant flowers during October to April. Grown as garden escape.</p>

Table-12

13. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Talinum portulacifolium</i> (Forssk.) Aschers ex Schweinf in Bull. Herb.Boiss.4, App.2:172.1896. Basionym: <i>Orygia portulacifolia</i> Forssk., Fl.Aegypt-Arab.103.1775. Synonym: <i>Talinum cuneifolium</i> Willd. Family : Portulacaceae.(Pl. II, Fig. 7) Local names: <i>Alak pui, Pnui, Bilati pui</i> (<i>pnuï</i>), <i>American palang, Australian</i> <i>pnuïn</i> Bengali. Native country: Africa.</p>	<p>Succulent branched perennial, mostly decumbent, with somewhat fleshy tuberous roots. Stems and branches terete, fleshy and soft. Leaves alternate, simple, spatulate, oblanceolate to ovate, 5-10 cm long and 2-3 cm wide, obtuse, entire along margin, fleshy, somewhat mucilaginous with prominent midvein, glabrous, petiolate. Flowers few, pinkish to rose-coloured, borne in axillary pedunculate branched cymes, 5-merous; petals 5, spatulate, elliptic. Fruits globose to ovoid capsule, many-seeded. Flowering and fruiting both occur throughout the year, more frequent from February to May. Grown as pot plant.</p>

Table-13

12. Names of plants with family, local names and native country	Identifying characters of plants
<p><i>Tagetes erecta</i> L. , Sp. Pl.ed.1:887.1753. (Pl. II, Fig. 6) Family : Compositae (Asteraceae). Local names: <i>Gandha, Ganda, Chutkey</i> <i>gandha, Ganda phul</i> in Bengali and French marigold, African Marigold, Aztec in English. Native country: Africa.</p>	<p>Erect, branched, aromatic annual herb, often with plenty of adventitious roots towards the basal portion of the stems. Stems and branches slightly angular-ribbed. Leaves opposite, pinnatisect and much segmented, 10-13 cm long and 5-8 cm wide, acute, serrate dentate along margin, prominently veined, green to rare often purple-green in colour. Flowers in capitula (heads); both homomorphic and heteromorphic; variously coloured as yellow, saffron to orange, or red, etc. Fruit cypsela. Flowering December to March, now throughout the year for some cultivars (Heywood., 1978).</p>

1. *Aerva javanica* (Ref. Table No. 1)

The plant is reported to use to stop bleeding of fresh cut as mentioned in the Medicinal Plant Resources of South Bengal (Santhosha and Kar, 2017). It is also mentioned by Mabberlay (2018) as used for local medicinal purpose.

In the present observation the juice of fresh leaves is used to stop bleeding of fresh or immediate cut and the leaf paste is also used as poultice to relieve the pain and for the remedy of any inflammation of this cut. The poultice is usually continued with fresh preparation till the complete remedy of this cut or wound. The haemostatic activity of the leaves is now more popular with the local people.

Another species *Aerva lanata* (L.) Juss.exSchultes (local name-*Chaya*) is very

well known for its uses in kidney disease (Mabberley, 2018) and also to treat cough, sore throat, diabetes, headache, lithiasis (Anon., 2004) and the roots as diuretic, anti-inflammatory, anthelmintic effects (Prasad *et al.*, 1986). It is well known as *Bhadra*, in Ayurvedic system, long been used as anti-inflammatory (Sivarajan and Balachandran, 1994; Prajapati *et al.*, 2003) and considered as astringent, bitter, cooling, emollient, vermifuge, suppurative, diuretic and lithontriptic (Prajapati *et al.*, 2003; Singh, 2006).

2. *Agave sisalang* (Ref. Table No. 2)

It is already mentioned in the report of Medicinal Plant Resources of South Bengal (Santhosha and Kar, 2017) that the three species as *Agave americana*, *A. cantala* and *A. sisalana*

have some medicinal uses.

A. americana L. (commonly known as Century plant, American aloe) where both roots and leaves are used to treat different diseases (Anon, 2004; Santhosha and Kar, 2017). The roots of *A. cantala* Roxb. ex Salm-Dyck (known as Cantala, Manila magney, Bombay aloe) is used as diuretic and diaphoretic and the leaf juice is applied to bruises (Santhosha and Kar, 2017). In case of *A. sisalana* Perrine (known as Sisal – named after Mexican sea port) it is mentioned that the leaf juice is used to treat low blood pressure and the juice of roasted leaves used in swelling of throat of cattle along with black pepper (Santhosha and Kar, 2017).

In *A. sisalana* it is presently noted that the roasted leaf juice is used as massage in slightly warm condition for the remedy of muscular pain of human being and to relief from inflammation. This treatment is done specially whenever there is severe muscular pain due to heavy work along with some swelling as well as inflammation of the muscles of legs or hands. This practice is done for 2-3 times in a day and continued for usually 3-5 days till remedy or relief. This observation is somewhat alike with the earlier findings as done in case of cattle. Sometimes, the leaves of *A. americana* are used for the same purposes without knowing its proper identity as the leaves look alike.

3. *Ageratum haustonianum* (Ref. Table No. 3)

Ageratum L. is an American genus is now pantropic in distribution particularly for its two species *A. conyzoides* L. (known as billy-goat weed, blue top) and *A. haustonianum* P.Mill. It is a widely cultivated ornamental edging plant

with blue and the cultivars with white and pink florets (Chadha, 2009) in condensed capitula (heads). It contains precocenes 1 & 2 (based on 2,2-dimethyl-cromene) which interfere with juvenile hormone activity and cause precocious metamorphosis of insects and an oil very toxic against *Fusarium* wilts of *Cajanus cajan* (Mabberley, 2018). *Ageratum conyzoides* L., known as *Uchunti*, *Dochunti*, *Kukursoka* etc. in Bengali, is used medicinally (Santhosha and Kar, 2017; Prajapati *et al.* 2003; Anon., 2004). Being looked alike with *Uchunti*, *A. haustonianum* P.Mill. is used by the local people and the leaf juice is applied for the washing or cleaning of wounds and also the skin-diseases.

4. *Ayapana triplinervis* (Ref. Table No. 4)

Plant is propagated through vegetative means. The whole plant is considered as medicinal one as used in different diseases (Santhosha and Kar, 2017). Due to the presence of various chemical constituents this plant is variously used in Ayurvedic treatments (Prajapati *et al.*, 2003). It is also used as medicinal tea and cultivated in Brazil (Mabberley, 2018).

In the present finding as additional report, the local peoples use the leaf juice to stop bleeding of any fresh cut and also use the leaf paste as poultice for the remedy of the cut or wound including the remedy of any pain and any inflammation due to cut. Moreover, the fresh leaf juice is taken by the local people for the remedy of blood dysentery with the doses usually one teaspoonful twice in a day and continued for 3-5 days. The leaf juice is also taken in case of anaemic condition of any person. The opinion

of the local people is in support of the use of this plant mainly to overcome the iron deficiency of man.

5. *Barleria lupulina* (Ref. Table No. 5)

It is already reported that the crushed leaves are applied to fresh cut, wounds and ulcers as a haemostatic to stop bleeding (Santhosha and Kar, 2017). The present study also supports this previous finding.

Moreover, it is seen that the poultice of fresh, crushed leaves or paste of fresh leaves is kept as bandage for the remedy of pain and swelling of the cut. Poultice is done for usually 3-5 days with the fresh leaf-paste and is often continued till remedy and relief of pain. The fresh leaf juice is also used for the washing and cleaning of any type of wounds and even the skin diseases of human being. Of course, Maberley (2018) has reported that both the leaves and roots are chewed against toothache in Mauritius and the aqueous extract of leaves with bright red mid-vein works wonder as local antiseptic on wounds and helps in healing to regain natural condition of skin with the remedy of wounds or cuts as stated by Sinha and Sinha (2001).

The locally applied Bengali name *Bishalyakarani*, quoted from the Ramayana, is also often used to some other plants which have the capability to stop bleeding of fresh cut as for the plants like *Justicia gendarussa* Burm. f. (syn.: *Gendarussa vulgaris* Nees) which is also known locally as *Jagatmadan* and *Vetaghni*. So to distinguish as well as to characterise this property of haemostatic to stop bleeding this local name *bishalyakarani* is often used prefixing another distinctive features of the

plants as *Lal bishalyakarani* for *Aerva javanica* and *Kanta bishalyakarani* for *Barleria lupulina* etc. *Justicia gendarussa* has the same property to stop bleeding of fresh cut (Santhosha and Kar, 2017) which is also growing as hedge plant in gardens.

6. *Calendula Officinalis* (Ref. Table No. 6)

Plant is an already established drug due to the presence of active principal chemicals – calendulin, calenduloside A–H (saponins) used for the remedy of many diseases, as stated in the review papers by Mehta *et al.* (2012) and Verma *et al.* (2018). Varlijen (1989) had reported that due to presence of calenduloside A it acts as anti-infectious diseases. It is used in fever in Portugal (Maberley, 2018). It is also reported to relieve muscle spasms, to prevent haemorrhage and to help the healing of wounds, also used as astringent, detoxifying agent and mild oestrogenic (Prajapati *et al.* (2003). The plant is used in the treatment of ulcers, both internal and external, and open sores and an ointment made of flowers is considered to be useful for skin complexions (Singh *et al.*, 1983).

The local peoples use the juice of florets and the leaves for the remedy of headache and rub over the forehead and take the smell of fresh crushed florets and leaves. The paste and juice of fresh florets are also used for skin diseases, wounds and fresh cut to stop bleeding. In case of any burn the paste of florets and the paste of the rhizome of turmeric (*Curcuma longa* L.) are mixed together and use as poultice for the remedy of the burn. Thus the antiseptic and anti-infectious properties are well noticed by the local men through their experiences.

7. *Catharanthus roseus* (Ref. Table No. 7)

The whole plant is medicinally used with 80 named alkaloids and notably vincristine and others have returning effect on progress of leukaemia discovered when tested for alleged effects in diabetes and in Hadgkin's Disease (Mabberley, 2018). The medicinal uses are now various as recorded by Santhosha and Kar (2017), Prajapati *et al.*, (2003) and Anon., (2004). The juice of the leaves is taken to reduce high blood pressure, to treat diabetes, blood dysentery, in griping pain of babies, to treat piles and root paste to treat fever (Anon., 2004). Pal and Jain (1998) had stated that the people of Lodha community uses the root paste of this plant for the curing of septic wounds, fever and the leaves for dysentery and the Santals use seeds for the treatment of epilepsy and latex for scabies and wounds and the leaf paste for piles.

It is seen that local people of this district believe that the white flowers have the capability to reduce sugar level of the blood and can help to control diabetes. So, adult people takes one white flower every morning and chewed to reduce the diabetic disease. Although it was mentioned that the plant has the capability for the remedy of diabetes. However, the results are not verified or tested for confirmation. Ghani (2003) had mentioned that the plant is used in treating diabetes in Bangladesh. So also by Sinha and Sinha (2001) had stated that the plant is traditionally used for the treatment of diabetes.

8. *Celosia argentea* (Ref. Table No. 8)

Although it is a garden ornamental plant, it has some medicinal properties with the presence of

several acids, alkaloids, sterols and nitrogen containing anthocyanins, lathosterol and its derivatives (Anon., 2004). The flowers are astringent, used in diarrhoea and in excessive menstrual discharges (Anon., 2004). The seed is demulcent and is useful in painful micturition, cough and dysentery (Anon., 2004). It is used as aphrodisiac, diuretic, useful in blood disease and mouth sores, for clearing the vision and eye disease

(Singh *et al.*, 1983; Prajapati *et al.*, 2003; Santhosha and Kar., 2017). The roots are chewed in empty stomach, twice daily, as a pain killer (Anon., 2004; Santhosha and Kar, 2017).

It is further reported that plant shows good antilithiatic activity preventing stone formation and to remove the stones as done in experimental rats (Dubey *et al.*, 1982).

Presently it is found that the leaves are taken and consumed by local people as vegetable as like different 'amaranthus'. It is considered to provide nutrients, regain appetite and to prevent anaemic condition.

9. *Coleus hadiensis* (Ref. Table No. 9)

The whole plant is used as expectorant, emmenagogue and diuretic (Santhosha and Kar, 2017). The tuberous roots are used to treat hypertension, glaucoma, asthma, congestive heart failures, metastatic condition, thrombosis (Prajapati *et al.*, 2003), also as spasmolytic and to treat constipation. The decoction of the plant is used as tonic and to treat worms. The leaf paste is applied on boils, eczema and skin diseases. The leaves are also used for the treatment of intestinal disorders. The plant is traditionally used by the ethnic people to cure

cardio-vascular diseases and to treat high pressure, abdominal colic, insomnia and memory loss, etc. (Sinha and Sinha, 2001).

The uses of the plants are known to activate hormone-sensitive adenylate cyclase and to act as potent hypotensive agent and for the treatment of glaucoma (Bhakuni, 1990; Sinha and Sinha, 2001). Mabberley (2018) had reported that the infusion of plant is used as lice-remover in Uganda and due to presence of diterpene (forskolin) it is a potential drug for hypertension, glaucoma, asthma, etc.

The present findings reveal that the local peoples use the aromatic leaves variously as the fresh leaves are rubbed over forehead to get relieve from headache, cold and cough; paste of fresh leaves used as poultice to relieve pain and inflammation of body muscles and the fresh leaf paste rubbed on chest to get relieve from cold, cough, bronchial trouble, asthma, etc. The fresh leaves are often used by mixing with the fresh leaves of tulsi (*Ocimum tenuiflorum* L.=*O. sanctum* L.) and rub then over forehead to get relieve from headache as more effective and more quicker.

10. *Eryngium foetidum* (Ref. Table No. 10)

It is a very popular one as often grown in kitchen gardens for the uses of aromatic leaves as a substitute of the leaves of Coriander (*Coriandrum sativum* L., family – Umbelliferae) during off season and thus the local name in Bengali is applied as of coriander smell and flavouring materials of culinary use. Eryngo is variously used as culinary herb (Devi *et al.*, 2016 ; Santhosha and Kar, 2017). There are also many reports of its

traditional uses as medicine, anti-inflammatory, analgesic, anti-convulsion, anti-clastogenic, anti-parasitic, anti-oxidant, antimicrobial, antibacterial, etc. (Devi *et al.*, 2016; Singh *et al.*, 2014). With different vernacular names as cilantro, fitweed, ngo-gai, thai coriander - leaves are taken as raw or steamed, pickled in Sikkim and as culinary herb in West Indies (Mabberley, 2018). The review work on this plant *Eryngium foetidum* had mentioned various economic uses (Devi *et al.*, 2016) including the medicinal properties.

The present findings on this plant are also of various uses as the rosette leaves are often used in curries while cooking and are made into paste to prepare 'chutney'. The fresh leaves are used as anti-vomiting purpose for children. The fresh leaves are rubbed on forehead to get relieve from headache and rare often to get remedy from cold and cough. All the local uses are not mentioned in the earlier report including the review work (Devi *et al.*, 2016; Santhosha and Kar, 2017). Of course, a drug for the treatment of arthritis and skin diseases has already developed in which the essential oil derived from this plant is one of the main components (Singh *et al.*, 2014).

11. *Stachytarpheta jamaicensis* (Ref. Table No. 11)

According to Singh (2006) in modern research the plant is used for antibacterial property. The whole plant is reported for some medicinal purposes and the leaves are used for cardiac troubles and to treat ulceration of nose (Santhosha and Kar, 2017). Ghani (2003) had added some more information for the medicinal

uses of this plant in Bangladesh.

Local peoples of Purba Medinipur district cultivate this plant in gardens and use the fresh leaf juice for the remedy of the pain, irritation and inflammation due to stinging of insect bites. Paste of fresh leaves is also used for few days, if required, to get relieve from pain. The insects are usually considered as any ants, red ants, bumble bee, honey bee and small spiders, etc. The juice of fresh leaves is also used to wash any wound of the body as considered with the antiseptic property of this plant.

12. *Tagetes erecta* (Ref. Table No. 12)

The whole plant and the leaves of *Tagetes erecta* are considered as medicinal and traditionally used in bleeding and menorrhagia as haemostatic activity (Singh, 2006). The presence of aromatic oil and the alkaloids find applicable against rheumatism, cold, bronchitis, hypotensive, spasmolytic, anti-inflammatory as well as purgative (Singh *et al.*, 1983). In Bangladesh this plant is also much used medicinally as reported by Ghani (2003).

The infusion of plant is used in rheumatism, colds and bronchitis. The juice of fresh leaves and flowers are considered as emmenagogue and used to cure bleeding piles and purifies blood. Leaves are also used in the treatment of kidney troubles, muscular pains and also applied to boils and carbuncles. The root extract is also used as laxative.

The present finding is that the local peoples of Purba Medinipur district use the fresh leaf juice to stop bleeding of fresh cut. They also make poultice of the paste of fresh leaves for the relief of pain and inflammation due to this cut and

continued till remedy. The juice of fresh leaves is often used as nasal drop to stop bleeding from the nose that happened during high warm season as well as during winter season with heavy cold for the children and others. Sometimes the juice of fresh leaves of *Cynodon dactylon* (L.) Pers. (Poaceae) is also mixed together to promote better result. The haemostatic activity of the leaves is more popular among men. The juice of fresh leaves is also taken as one teaspoonful twice in a day for the remedy of anaemic condition and is continued for 3 to 5 days or till remedy.

13. *Talinum portulacifolium* (Ref. Table No. 13)

It is a cultivated garden plant, grown along borders in almost all the tropical climatic condition and propagated mostly by vegetative means with the fragments of lower branches, less often by seeds. It is used as a vegetable with fleshy stems and leaves. In addition to its culinary use it possesses some medicinal importance as the whole plant is used as an aphrodisiac (Santhosha and Kar, 2017).

Local peoples, although taken this plant *T. portulacifolium* as vegetable, cooked and eaten just like *Basella alba* L. (Basellaceae) but they often considered this plant as a laxative one. Peoples believe that this vegetable is helpful against constipation, can increase appetite and the substitute of many of the minerals available from different other vegetables.

Discussion and Conclusion: Most of the rural population are still dependant on the available medicinal plants growing around their locality for their everyday uses for the remedial measures of their ailments or diseases. The

people are, although well known about the herbal drugs of the indigenous plants but they are not much aware about the exotic plants and their respective medicinal properties. With the local communication and their own inventorization the further uses of other unknown plants as medicine were developed by themselves. Moreover, by trial and error they have selected these to use as they have got remedial results without any harmful effects.

The amount, time, doses and duration of uses were also standardized by themselves for proper remedial measures as well as benefits too. Thus the people are in success by the choosing of medicinal uses of cultivated garden plants which are not indigenous to our country. The alternate or substitute materials are always beneficial as that are easily available at hand and also of satisfactory amount of requirement.

Amongst the studied 13 plants only *Agave sisalana* is a woody plant. Similarly *Barlaria lupulina* and *Stachytarpheta jamaicensis* are of shrubby habitat. All the rest plants are herbaceous. Only a few plants as *Ageratum haustonianum* and *Calendula officinalis* are available in a particular season of the year. Otherwise all other plants are available throughout the year. Out of these 13 plants the leaves are used for all except *Catharanthus roseus* where the flowers are eaten. In case of three plants as *Celosia argentea*, *Eryngium foetidum* and *Talinum portulacifolium* the leaves are taken as vegetable and eaten after cooking. Thus the maximum uses are of

external, not internal. Moreover, in maximum cases the juice and paste of fresh leaves are used to stop bleeding of fresh cut and taken for the remedy of headache, cold and cough. So, the mode of application is almost external. The records of the various uses of these plants are supportive based on the earlier evidences of these plants as recorded in respect of their properties and uses. So by trial and error the peoples are able to gain knowledge of using a new plant for new medicinal application.

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Plate I Figures: 1- *Aerva javanica*, 2- *Agave sisalana*, 3- *Ageratum haustonianum*,
4- *Ayapana triplinervis*, 5- *Barleria lupulina*, 6- *Calendula officinalis*

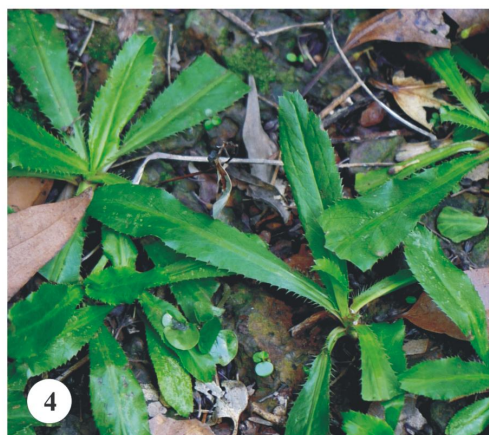
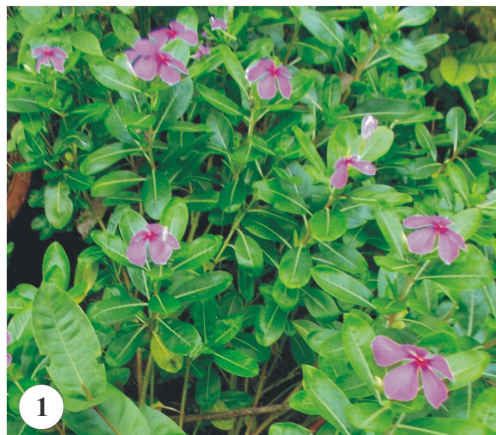


Plate II Figures: 1- *Catharanthus roseus*, 2- *Celosia argentea*, 3- *Coleus hadiensis*,
4- *Eryngium foetidum*, 5- *Stachytarpheta jamaicensis*, 6- *Talinum portulacifolium*



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9

Plate III. Images of author at various nurseries and garden: Fig. 1,2,3– At Malay Nursery, Panskura Fig. 4,5– At Arupam Nirupam Nursery, Panskura, Fig. 6- Author with Mr. Kalyan Maiti at Arupam Nirupam Nursery, Fig. 7- At one of the private gardens, Chandipur Fig. 8- At Sreejani Nursery, Panskura, Fig. 9- At Krishna Nursery, Panskura.

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