RESEARCH ARTICLE

Exploration of Medicinal Plants in Shahjahanpur District of Uttar Pradesh: Need for Conservation

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ABSTRACT

Aim: To explore the medicinal plants from Shahjahanpur forest divisions of Uttar Pradesh.

Materials and methods: Exploration of the Shahjahanpur forest division has been carried out during the month of June 2017. Data were collected during the medicoethno-botanical survey from Shahjahanpur forest divisions of Uttar Pradesh.

Results: During exploration, records of commonly occurring medicinal plants and traditional practices with their global positioning system and potential in the field have been recorded. The important medicinal plants like Aegle marmelos (L.) Correa, Celastrus paniculatus Willd., Centella asiatica (L.) Urb., Desmodium gangeticum (L.) DC., Helicteres isora L., Holarrhena pubescens Wall. ex G. Don, Oroxylum indicum (L.) Kurz, Premna mollisima Roth, Solanum nigrum L., Terminalia tomentosa Wight and Arn. Tribulus terrestris L., etc., were recorded, which can be undertaken for pharmaceutical use through systemic conservation and cultivation. Very little knowledge is available for traditional use of medicinal plants in the area. There is a need of developing awareness among the local people of the areas.

Conclusion: The study area is widely occupied by plants of Holarrhena pubescens Wall. ex G. Don and Celastrus paniculatus Willd., Oroxylum indicum (L.) Kurz, etc., for conservation in the habitat.

Keywords: Conservation, Exploration, Helicteres isora L., Medicinal plants, Utilization.

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INTRODUCTION

The district Shahjahanpur stretched between 27°27′ N to 28°28′ N and 79°19′ to 80°23′ E in Uttar Pradesh with a geographical area of 4,575 km² (agri.up.nic.in) in the largest state of India is located in the northern part bordering with state of Bihar in the east, Uttarakhand and Delhi in the north, and Madhya Pradesh in the west and south covering an area with varying geographical zones, i.e., Tarai areas of Upper Gangetic plains, dry rocky Vindhyan plateau, and Bundelkhand suspended in the Madhya Pradesh with a forest cover of tropical forests only. It occupies a land area of 2,716,425 km² and comprises 75 districts.

The areas covered under extensive exploration in Uttar Pradesh are Shahjahanpur Forest Division falling into Tarai belt of Upper Gangetic plains, distinguished with the prominent rivers Gomti, Ramganga, and Ganga traversing toward southeast in the state. These forests receive moderate rainfall and maintain a reasonable floral and faunal biodiversity. The study area is surrounded by Kheri, Sitapur, and Hardoi districts in the east, Pilibhit in the north, Bareli and Badayun in the west, and Farrukhabad in the south. The district is occupied by agriculture land except Khutari range with natural forest located in the northern part adjoining Pilibhit and Kheri districts with Corbet National Park. Tribal people are very meager in the area. Traditional knowledge is only confined to villagers and traditional practitioners are negligible. Forest cover in entire Uttar Pradesh is only 5.8% of the entire area, i.e., 21.833 km² (State Forest Report 2003, published by the Forest Survey of India, Uttar Pradesh).

Authors made an extensive exploration of Shahjahanpur Forest divisions for the first time with a noting on GPS status, which has not yet been recorded in past.1-15 Plants used by rural communities of Shahjahanpur districts have been described.16 Disorders related with individual plants are as per published records.17-20 During exploration, records of commonly occurring medicinal plants and traditional practices with their global positioning system and potential in the field have been recorded. The important medicinal plants like Aegle marmelos (L.) Correa, Celastrus paniculatus Willd., Centella asiatica (L.) Urb., Desmodium gangeticum (L.) DC., Helicteres isora L., Holarrhena pubescens Wall. ex G. Don, Oroxylum indicum (L.) Kurz, Premna mollisima Roth, Solanum nigrum L., Terminalia tomentosa Wight and Arn. Tribulus terrestris L., etc., were recorded, which can be undertaken for pharmaceutical use through systemic conservation and cultivation. Very little knowledge is available for traditional use of medicinal plants in the area. There is a need of developing awareness among the local people of the areas.

Conclusion: The study area is widely occupied by plants of Holarrhena pubescens Wall. ex G. Don and Celastrus paniculatus Willd., Oroxylum indicum (L.) Kurz, etc., for conservation in the habitat.

Keywords: Conservation, Exploration, Helicteres isora L., Medicinal plants, Utilization.

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Conflict of interest: None

Exploration of ethnomedicinal plants in the forest and rural areas of Shahjahanpur Forest division has been conducted during June 2017. The paper represents the exploration of medicinal wealth with an emphasis on pharmaceutically viable medicinal plants with GPS location and some specific plants of new importance used by local rural people in the explored areas. Emphasis on pharmaceutical potential for conservational aspects of traditionally used medicinal plants has been described for the first time in the concerned forest divisions falling under Tarai belt of Uttar Pradesh.

MATERIALS AND METHODS

Extensive exploration has been conducted in different forest areas falling under Shahjahanpur forest divisions of Uttar Pradesh. Records of the collections have been observed with the global positioning system (GPS) at different places with their distribution at different spots. The Herbarium vouchers were made by drying, poisoning, and mounting on Herbarium sheets21 and deposited in...
the Herbarium of Regional Ayurveda Research Institute (Acronym JHS). Authenticity of Herbarium was made after consulting the Herbarium of the institute, which was confirmed by comparing with Herbarium sheets kept in the Herbarium of Botanical Survey of India, Allahabad. During field observation, suitability of medicinal plants with high demand and commercial values as well as methods for conservation have been studied by bringing the sufficient germ plasm in the Garden of Regional Ayurveda Research Institute, Jhansi. Attempts have also been made to know the potential of highly used medicinal plants and ethnomedicinal uses of medicinal plants in the area and by the use of previously described methods, the attempts made for commercialization as well as conservational aspects.

**Observations**

The important medicinal plants distributed in the study areas of Shahjahanpur forest divisions of Uttar Pradesh have been given in Table 1. Their potential in the field has also been recorded and presented through this communication (Fig. 1).

**Exploration**

The results of exploration in the study areas have been described in Table 1.

**Conservation**

Conservation of medicinal plants in Tarai region of Uttar Pradesh to which the study areas belong, needs for enriching the locally available medicinal plants in their vicinity which has the commercial value as it is fact due to shortage of plant for the root, the whole plant of *Pleurolobus gangeticus* (L.) J.St.-Hil. ex H.Ohashi and K.Ohashi, *Grona triflora* (L.) H.Ohashi and K.Ohashi and *Flemingia* spp. are traded in different markets in the name of Shalparni. Similar is the case for certain other plants also. Besides there is also need of conservation of *Asparagus racemosus* Willd., *Chlorophytum tuberosum* (Roxb.) Baker, *Curculigo orchioides* Gaertn., *Helicteres isora* L., *Oroxylum indicum* (L.) Kurz, *Rauvolfia serpentine* (L.) Benth. ex Kurz, *Santalum album* L., and *Semecarpus anacardium* L.f. through cultivation in the field. Attempts may also be made toward cultivation of *Cinnamomum verum* J. Presl and *Pterocarpus santalinus* L.f.

**Discussion**

In past plants used by villagers of Shahjahanpur district have been described, whereas the records on global distribution status and quantification of important medicinal plants were unexplored.

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**Table 1: List of important medicinal plants distributed in the study areas**

| Sl. no. | Plant name                        | Sanskrit name/ vernacular name | Place of collection/habit | Collection no. | Accession no. | GPS status       |
|---------|-----------------------------------|--------------------------------|---------------------------|----------------|---------------|-----------------|
| 1       | Abrus precatorius L.              | Gunja/Ratti                    | Khutar range (Climber)    | 10,057         | 27,605        | N28°11.914 E080°16.613 |
| 2       | Abutilon indicum (L.) Sweet       | Atibala/Khangi                 | Tilhar range (Shrub)      | 10,019         | 27,532        | N27°55.479 E079°48.711   |
| 3       | Acacia catechu (L.f.) Wild.       | Khadir/Khair, Kattha           | Uchauliya (Tree)          | 9,959          | 27,416        | N27°49.316 E080°02.264 |
| 4       | A. leucophaea Wild.               | Shwet Barbura                  | Uchauliya (Tree)          | 9,950          | 27,398        | N27°49.310 E080°02.649 |
| 5       | Acacia nilotica subsp. indica (Benth.) Brenan | Babbul/Babul                 | Tilhar range (Tree)       | 10,042         | 27,567        | N28°04.890 E080°06.967 |
| 6       | Acalypha indica L.                | Haritmanjari/Kuppi             | Pigara Pigari (Herb)      | 9,975          | 27,446        | N27°49.539 E080°02.199 |
| 7       | Achyranthes aspera L.             | Aparmaera/Chirchiri            | Uchauliya (Herb)          | 9,938          | 27,371        | N27°49.506 E080°02.206 |
| 8       | Acmella uliginosa (Sw.) Cass.     | Akarkara                       | Uchauliya (Herb)          | 9,954          | 27,406        | N27°49.504 E080°02.214 |
| 9       | Adina cordifolia (Roxb.) Brandis  | Haridru/Haldu                  | Garhi beat (Tree)         | 10,070         | 27,630        | N28°20.086 E080°21.484 |
| 10      | Aegle marmelos (L.) Correa        | Bilva/Bael                     | Tilhar range (Tree)       | 10,044         | 27,580        | N28°08.327 E080°11.369 |

*Contd...*
| Sl. no. | Plant name | Sanskrit name/vernacular name | Place of collection/habit | Collection no. | Accession no. | GPS status |
|--------|------------|-------------------------------|---------------------------|----------------|--------------|------------|
| 11     | Ailanthus excelsa (Roxb.) | Aralu Uchauliya Tree | 9,960 | 27,418 | N27°49.322 E080°02.289 |
| 12     | Albizia lebbeck (L.) Benth. | Sirisa/Shiris Cantt. SJP Tree | 10,000 | 27,494 | N27°51.925 E079°54.390 |
| 13     | Alstonia scholaris (L.) R. Br. | Saptaparna/Chtitauni Tilhar range Tree | 10,032 | 27,556 | N27°58.974 E079°40.025 |
| 14     | Alternanthera sessilis (L.) R. Br. ex.DC. | Matsuakshi Garhi beat Herb | 10,071 | 27,632 | N28°20.091 E080°21.502 |
| 15     | A. pungens Kunth | Mandanpura Shrub | 10,121 | 27,726 | N28°23.744 E080°07.669 |
| 16     | Amaranthus viridis L. | Tnduliya Uchauliya Herb | 9,956 | 27,410 | N27°49.504 E080°02.214 |
| 17     | Ampelocissus latifolia (Roxb.) Planch. | Tilhar range Climber | 10,036 | 27,564 | N29°08.003 E080°10.954 |
| 18     | Argemone mexicana L. | Swarnakshiri Tilhar range Herb | 10,039 | 27,570 | N28°08.069 E080°11.137 |
| 19     | A. ochroleuca | Pigara Pigari Herb | 9,980 | 27,457 | N27°57.216 E079°51.040 |
| 20     | Arundo donax L. | Nal/Narkat Khutar range Shrub | 10,051 | 27,594 | N28°08.768 E080°12.928 |
| 21     | Asparagus racemosus Wild. | Shatavari/Satava Kant Tree | 9,991 | 27,478 | N27°51.925 E079°54.390 |
| 22     | Azadirachta indica (A. Juss.) | Nimba/Neem Kant Tree | 10,009 | 27,509 | N27°49.282 E079°39.370 |
| 23     | Thespesia lampas (Cav.) Dalzell | Van Karpash Garhi beat Shrub | 10,093 | 27,673 | N28°11.565 E080°16.685 |
| 24     | Baliospermum montanum (Willd.) Mull. Arg. | Danti Mandanpura Shrub | 10,113 | 27,712 | N28°23.355 E080°07.664 |
| 25     | Barringtonia acutangula (L.) Gaertn. | Nichul Cantt. SJP Tree | 10,004 | 27,499 | N27°51.923 E079°54.388 |
| 26     | Bauhinia malabarica Roxb. | Garhi beat Tree | 10,081 | 27,654 | N28°20.262 E080°21.680 |
| 27     | Bauhinia racemosa Lam. | Tilhar range Tree | 10,030 | 27,553 | N27°59.194 E079°40.014 |
| 28     | Bauhinia purpurea L. | Kovidar Tilhar range Tree | 10,031 | 27,555 | N27°58.974 E079°40.025 |
| 29     | Boerhavia diffusa L. | Punarnava Kant Tree | 9,996 | 27,486 | N27°51.923 E079°54.390 |
| 30     | Bombax ceiba L. | Shalmali Cantt. SJP Tree | 10,005 | 27,501 | N27°51.927 E079°54.378 |
| 31     | Bridelia retusa (L.) A. Juss. | Kamboji Tilhar range Tree | 10,046 | 27,584 | N28°08.011 E080°06.090 |
| 32     | Buchanania cochinchinensis Lour. M.R. Almeida | Priyal/Chiraunji Garhi beat Tree | 10,086 | 27,661 | N28°20.154 E080°21.488 |
| 33     | Butea monosperma (Lam.) Kuntze | Palash/Dhak Uchauliya Tree | 9,949 | 27,396 | N27°49.306 E080°02.645 |
| 34     | Guilandina bonduc L. | Lata Karanja Kant Shrub | 10,008 | 27,507 | N27°47.923 E079°46.880 |
| 35     | Calamus rotang L. | Vetra/Bent Bilinda Pur Shrub | 10,105 | 27,696 | N28°16.187 E080°11.608 |
| 36     | Calotropis gigantea (L.) W.T. Aiton | Alarka/Madar Uchauliya Shrub | 9,973 | 27,442 | N27°49.540 E080°02.197 |
| Sl. no. | Plant name | Sanskrit name/ vernacular name | Place of collection/habit | Collection no. | Accession no. | GPS status |
|---------|------------|-------------------------------|---------------------------|---------------|--------------|------------|
| 37      | *C. procera* (Aiton) W.T. Aiton | Arka/Madar | Pigara Pigari | Shrub | 9,981 | 27,459 | N27°5.7216 E079°51.040 |
| 38      | *Canna indica* L. | — | Tilhar range | Herb | 10,029 | 27,551 | N27°58.668 E079°43.070 |
| 39      | *Cannabis sativa* L. | Vijaya/Bhang | Cantt. SJP | Herb | 9,990 | 27,476 | N27°51.915 E079°54.385 |
| 40      | *Capparis sepia* L. | Griddhanakhi | Cantt. SJP | Shrub | 9,997 | 27,488 | N27°51.923 E079°54.390 |
| 41      | *C. zeylanica* L. | Vyaghanakhi/ Kareruwa | Uchauliya | Climber | 9,952 | 27,402 | N27°49.306 E080°02.760 |
| 42      | *Cardiospermum halicacabum* L. | Karnaspota | Tilhar range | Do | 10,038 | 27,568 | N28°08.025 E080°10.984 |
| 43      | *Careya arborea* Roxb. | Kumbhi | Mandanpura | Tree | 10,127 | 27,736 | N28°23.521 E080°07.647 |
| 44      | *Carissa carandas* L. | Karmarda | Mandanpura | Shrub | 10,120 | 27,724 | N28°23.768 E080°07.674 |
| 45      | *Carissa spinarum* L. | Karmardika | Uchauliya | Shrub | 9,974 | 27,444 | N27°49.351 E080°02.520 |
| 46      | *Casearia graveolens* Dalzell. | Chilhar | Garhi | Shrub | 10,095 | 27,677 | N28°23.163 E080°19.568 |
| 47      | *Catunaregam spinosa* (Thunberg) Triveng. | Madana | Uchauliya | Tree | 9,969 | 27,434 | N27°49.392 E080°02.916 |
| 48      | *Cayratia trifolia* (L.) Domin | Atyamalaparni | Madanapur | Climber | 10,013 | 27,522 | N27°42.817 E079°39.567 |
| 49      | *Celastrus paniculatus* Willd. | Jyotismati | Uchauliya | Shrub | 9,962 | 27,422 | N27°49.288 E080°03.000 |
| 50      | *Centella asiatica* (L.) Urb. | Mandukpami | Mandanpura | Herb | 10,122 | 27,728 | N28°23.744 E080°07.669 |
| 51      | *Cerisoides turgida* (Roxb.) Tirveng. | Mahapinditaru | Garhi | Shrub | 10,092 | 27,671 | N28°23.163 E080°19.568 |
| 52      | *Cheilocostus speciosus* (J. Koing.) C. D. Specht. | Kebuk | Garhi | Herb | 10,089 | 27,667 | N28°22.997 E080°19.352 |
| 53      | *Chlorophytum tuberosum* (Roxb.) Baker | Swet Musali | Garhi | Herb | 10,079 | 27,648 | N28°20.267 E080°21.637 |
| 54      | *Chrozophora rottleri* (Gaeseler) Spreng. | — | Uchauliya | Herb | 9,963 | 27,424 | N27°49.307 E080°03.822 |
| 55      | *Chrysopogon zizanioides* (L.) Roberty | Ushir/Khas | Garhi | Herb | 10,098 | 27,683 | N28°23.179 E080°19.548 |
| 56      | *Cissampelos glaberrima* A.St.-Hil | Patha | Uchauliya | Climber | 9,943 | 27,382 | N27°49.440 E080°02.278 |
| 57      | *Cleome viscosa* L. | Suvarchala | Tilhar range | Herb | 10,021 | 27,535 | N27°55.798 E079°48.340 |
| 58      | *Clerodendrum infortu- natum* L. | Bhandir | Uchauliya | Shrub | 9,934 | 27,369 | N27°49.440 E080°02.278 |
| 59      | *Coccinia grandis* (L.) Voigt | Bimbi/Gurdgun | Kant-Jalalabad | Climber | 10,007 | 27,505 | N27°49.282 E079°39.567 |
| 60      | *Coccus hirsutus* (L.) W. Theob. | Chilhint | Cantt. SJP | Climber | 10,001 | 27,496 | N27°51.925 E079°54.390 |
| 61      | *Cordia dichotoma* G. Forst. | Sleshmatak/ Lisora | Uchauliya | Tree | 9,970 | 27,436 | N27°49.504 E080°02.214 |
| 62      | *Crateva magna* (Lour.) DC. | Varun | Cantt. SJP | Tree | 10,002 | 27,497 | N27°51.927 E079°54.388 |
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| Sl. no. | Plant name | Sanskrit name/vernacular name | Place of collection/habit | Collection no. | Accession no. | GPS status |
|--------|------------|-------------------------------|---------------------------|----------------|---------------|------------|
| 63     | Cryptolepis dubia (Burm. f) M. R. Almeida | Krishna Sariva Khutar range Climber | 10,059 | 27,609 | N28°11.565 E080°16.685 |
| 64     | Curculigo orchioides Gaertn. | Talmuli Garhi beat Herb | 10,064 | 27,619 | N28°20.097 E080°21.466 |
| 65     | Cuscuta reflexa Roxb. | Akashvalli Tilhar range Parasite | 10,040 | 27,572 | N29°08.069 E080°11.137 |
| 66     | Cyanthillium cinereum (L.) H.Rob. | Sahadevi Uchauliya Herb | 9,944 | 27,384 | N27°49.421 E080°02.304 |
| 67     | Cynoglossum wallichii G. Don | — Bilinda Pur Herb | 10,101 | 27,688 | N28°14.558 E080°09.155 |
| 68     | Dalbergia sissoo Roxb. ex DC. | Shinhap/Shisham Tree | 10,074 | 27,638 | N28°20.124 E080°21.535 |
| 69     | Datura metel L. | Dhatura Uchauliya Shrub | 9,961 | 27,420 | N27°49.288 E080°02.990 |
| 70     | Dendrophthoe falcata (L.f) Ettings | Meshshringa Uchauliya Parasite | 9,953 | 27,404 | N27°49.392 E080°02.916 |
| 71     | Desmostachya bipinnata (L.) Stapf. | Kush/Kusha Uchauliya Herb | 9,945 | 27,386 | N27°49.428 E080°02.325 |
| 72     | Dillenia pentagyna Roxb. | Aglya Garhi beat Tree | 10,091 | — | N28°23.053 E080°19.364 |
| 73     | Dioscorea pentaphylla L. | Kantalu Garhi beat Climber | 10,065 | — | N28°20.097 E080°21.466 |
| 74     | D. pubera Blume | — Mandalpura beat Climber | 10,126 | — | N28°23.521 E080°07.647 |
| 75     | Diospyros melanoxylon Roxb. | Tindook/Tendu Garhi beat Tree | 10,099 | 27,684 | N28°23.186 E080°19.459 |
| 76     | D. montana Roxb. | Vish Tendu Uchauliya Tree | 9,939 | 27,373 | N27°49.506 E080°02.206 |
| 77     | Eclipta prostrata (L.) L. | Bhringaraja/Bhagraiya | 9,941 | 27,378 | N27°49.420 E080°02.325 |
| 78     | Euphorbia hirta L. | Bhihat-Dugdhika Pigara Pigari Herb | 9,977 | 27,450 | N27°49.339 E080°02.199 |
| 79     | Evolvulus nummularius (L.) L. | Vishnukranti Khutar range Herb | 10,062 | 27,615 | N28°10.794 E080°18.797 |
| 80     | Ficus benghalensis L. | Vat/Bargad Khutar range Tree | 10,061 | 27,613 | N28°04.890 E080°06.967 |
| 81     | F. hispida L. f. | Kasthodumber Uchauliya Tree | 99,57 | 27,412 | N27°49.504 E080°02.214 |
| 82     | F. lacor Buch.-Ham. | Plakash/Pakar Uchauliya Tree | 9,967 | — | N27°49.438 E080°02.956 |
| 83     | F. palmata Forssk. | Pigara Pigari Shrub | 9,976 | 27,448 | N27°49.539 E080°02.199 |
| 84     | F. racemosa L. | Udambare/Gular Garhi beat Shrub | 10,085 | 27,660 | N28°20.171 E080°21.264 |
| 85     | F. religiosa L. | Ashvattha/Pipal Uchauliya Tree | 9,948 | 27,294 | N27°49.358 E080°02.473 |
| 86     | Flacourtia indica (Burm. f) Merr. | Vikankat Uchauliya Tree | 9,965 | 27,428 | N27°49.392 E080°02.916 |
| 87     | Flemingia macrophylla (Willld.) Kurze ex Merr. | Bara Salpan Garhi beat Herb | 10,072 | 27,634 | N28°20.102 E080°21.514 |
| 88     | Glycosmis pentaphylla (Retz.) DC. | Ashwa shakhotaka/Vana Nimbu Garhi beat Shrub | 10,090 | 27,669 | N28°22.997 E080°19.352 |

Contd...
| Sl. no. | Plant name                          | Sanskrit name/ vernacular name | Place of collection/habit | Collection no. | Accession no. | GPS status |
|--------|------------------------------------|--------------------------------|---------------------------|----------------|--------------|------------|
| 89     | *Gmelina arborea* Roxb. ex Sm.     | Gambhari                       | Tilhar range              | 10,035         | 27,562       | N29°08.003  |
|        |                                    |                                |                           |                |              | E080°10.954 |
| 90     | *Grangea maderaspatana* (L.) Poir. | —                              | Pigara Pigari Herbarium   | 9,982          | 27,461       | N27°57.216  |
|        |                                    |                                |                           |                |              | E079°51.040 |
| 91     | *Grewia asiatica* L.               | Parushak                       | Garhi beat small tree     | 10,073         | 27,636       | N28°20.115  |
|        |                                    |                                |                           |                |              | E080°21.530 |
| 92     | *G. helictrifolia* Wall. ex G. Don | Kukurbichchha                  | *Herb*                    | 10,088         | 27,665       | N28°22.970  |
|        |                                    |                                |                           |                |              | E080°19.344 |
| 93     | *Helicteres isora* L.              | Avartini/ Marod fali            | *Shrub*                   | 10,048         | 27,588       | N28°08.768  |
|        |                                    |                                |                           |                |              | E080°06.928 |
| 94     | *Helminthostachys zeylanica* (L.) Hook. | Kamraja                       | *Herb/fern*               | 10,066         | 27,621       | N28°20.097  |
|        |                                    |                                |                           |                |              | E080°21.466 |
| 95     | *Holarrhena pubescens* Wall. ex G. Don | Kutaj                         | *Tree*                    | 10,078         | 27,646       | N28°20.267  |
|        |                                    |                                |                           |                |              | E080°21.637 |
| 96     | *Holoptelea integrifolia* (Roxb.) Planch. | Chirabilva                   | Uchauliya                 | 99,42          | 27,380       | N27°49.410  |
|        |                                    |                                |                           |                |              | E080°02.348 |
| 97     | *Ichnocarpus frutescens* (L.) W.T. Alton | Krishna sariva               | *Climber*                 | 9,987          | 27,470       | N27°51.915  |
|        |                                    |                                |                           |                |              | E079°54.385 |
| 98     | *Jatropha gossypifolia* L.          | —                              | Mandanpura beat           | 10,116         | 27,718       | N27°49.431  |
|        |                                    |                                |                           |                |              | E079°40.232 |
| 99     | *Justicia adhatoda* L.             | Vasa/Adusa                     | Mandanpur                | 10,014         | 27,521       | N27°49.431  |
|        |                                    |                                |                           |                |              | E079°40.232 |
| 100    | *Lannea coromandelica* (Houtt.) Merr. | Gudmanjari                   | Bilinda Pur Shrub        | 10,107         | 27,700       | N28°15.410  |
|        |                                    |                                |                           |                |              | E080°09.769 |
| 101    | *Lygodium flexuosum* (L.) Sw.      | Kali Jari                      | Garhi beat Climber       | 10,068         | 27,625       | N28°20.085  |
|        |                                    |                                |                           |                |              | E080°21.465 |
| 102    | *Madhuca longifolia* (J. Koening. ex L.) J.F. Macbr. | Madhuka/ Mahuwa             | Mandanpur                | 10,010         | 27,512       | N27°53.260  |
|        |                                    |                                |                           |                |              | E079°40.551 |
| 103    | *Mallotus philippensis* (Lam.) Mull. Arg. | Kampillak/ Rohina           | *Tree*                    | 10,033         | 27,558       | N29°08.003  |
|        |                                    |                                |                           |                |              | E080°10.954 |
| 104    | *Marsilea minuta* L.               | Sunisanakka                    | Khut range Aquatic herb   | 10,054         | 27,599       | N28°11.291  |
|        |                                    |                                |                           |                |              | E080°15.160 |
| 105    | *Melia azedarach* L.               | Mahanimb/Bakain               | Khut range Tree           | 10,049         | 27,590       | N28°08.768  |
|        |                                    |                                |                           |                |              | E080°06.928 |
| 106    | *Miliusa tomentosa* (Roxb.) Finet and Gagnep | Kari                          | Garhi beat Shrub         | 10,069         | 27,628       | N28°20.085  |
|        |                                    |                                |                           |                |              | E080°21.486 |
| 107    | *Millettia extensa* (Benth.) Benth. ex Baker | Gauj                         | Bilinda Pur Scand ant    | 10,104         | 27,694       | N28°16.160  |
|        |                                    |                                |                           |                |              | E080°11.567 |
| 108    | *Mimosa pudica* L.                 | Lajjalu/Chhu-imui             | Uchauliya                 | 9,955          | 27,408       | N27°49.504  |
|        |                                    |                                |                           |                |              | E080°02.214 |
| 109    | *Mitragyna parvifolia* (Roxb.) Korth. | Dhuli Kadamb             | Uchauliya                 | 9,947          | 27,390       | N27°49.374  |
|        |                                    |                                |                           |                |              | E080°02.406 |
| 110    | *Momordica balsamina* L.           | Sushavi                       | Cantt. SJP Climber       | 9,999          | 27,492       | N27°51.925  |
|        |                                    |                                |                           |                |              | E079°54.390 |
| 111    | *Morinda coreia* Buch. Ham Sm.     | —                             | Uchauliya                 | 9,946          | 27,388       | N27°49.390  |
|        |                                    |                                |                           |                |              | E080°02.374 |
| 112    | *Morus alba* L.                    | Tud, Shahtut                  | Tilhar range Tree        | 10,045         | 27,582       | N28°08.011  |
|        |                                    |                                |                           |                |              | E080°06.090 |

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| Sl. no. | Plant name               | Sanskrit name/ vernacular name | Place of collection/habit | Collection no. | Accession no. | GPS status       |
|--------|--------------------------|-------------------------------|---------------------------|----------------|--------------|-----------------|
| 113    | Murraya koeningii (L.) Spreng. | Kaidarya/Mithi Neem           | Cantt. SJP Shrub          | 9,985          | 27,467       | N27°51.915, E079°54.385 |
| 114    | M. paniculata (L.) Jack.    | —                             | Cantt. SJP Shrub          | 9,993          | —            | N27°51.925, E079°54.390   |
| 115    | Nelsonia canescens (Lam.) Spreng. | —                            | Uchauliya Herb            | 9,940          | 27,375       | N27°49.374, E080°02.040   |
| 116    | Nelumbo nucifera Gaertn.    | Kamal                         | Tilhar range Aquatic herb | 10,041         | 27,574       | N28°04.890, E080°06.967 |
| 117    | Neolamarckia cadamba (Roxb.) Bosser | Kadamb                      | Khutar range Tree         | 10,055         | 27,601       | N28°11.902, E080°16.596   |
| 118    | Nicotiana plumbaginifolia Viv. | —                            | Tilhar range Herb         | 10,028         | 27,549       | N27°58.705, E079°43.084   |
| 119    | Oplismenus burmanni (Retz.) P. Beauv. | Vans Patri                  | Cantt. SJP                | 9,992          | 27,480       | N27°51.925, E079°54.390   |
| 120    | Opuntia stricta (Haw.) Haw. | Nagphani                      | Tilhar range Herb         | 10,034         | 27,560       | N27°57.969, E079°58.036   |
| 121    | Oroxylum indicum (L.) Kurz | Shyonak                       | Tilhar range Tree         | 10,047         | 27,586       | N28°08.475, E080°11.555   |
| 122    | Oxalis corniculata L. | Changeri/ Tinpatiya          | Madanapur Herb            | 10,012         | 27,517       | N27°53.260, E079°40.551   |
| 123    | Phoenix acaulis Roxb. | Bhu- Kharjurika Khajur        | Garhi beat Uchauliya Tree | 9,968          | 27,432       | N27°49.438, E080°02.956   |
| 124    | P. sylvestris (L.) Roxb. | Bhatar                | Garhi beat Uchauliya Tree | 9,968          | 27,432       | N27°49.438, E080°02.956   |
| 125    | Phyla nodiflora (L.) Greene | Jalapippali                  | Pigara Pigari Herb        | 9,979          | 27,454       | N27°51.925, E079°54.390   |
| 126    | Phyllanthus emblica L. | Amalki                         | Garhi beat Tree           | 10,083         | 27,658       | N28°20.191, E080°21.441   |
| 127    | P. amarus Schumach and Thonn | Bhumyamlaki                     | Tilhar range Herb         | 10,026         | 27,545       | N27°58.705, E079°43.084   |
| 128    | P. reticulatus Poir. | —                             | Cantt. SJP Shrub          | 9,995          | 27,484       | N27°51.925, E079°54.390   |
| 129    | P. urinaria L. | Lal- Bhuiavla                  | Mandanpura beat Hormed      | 10,114         | 27,714       | N28°23.630, E080°08.002   |
| 130    | Pistia stratiotes L. | Variparni                      | Uchauliya Aquatic herb    | 9,964          | 27,426       | N27°49.307, E080°03.022   |
| 131    | Pithecellobium dulce (Roxb.) Benth. | Jangal-Jalebi                | Tilhar range Tree         | 10,037         | 27,566       | N28°06.482, E080°10.007   |
| 132    | Desmodium gangeticum (L.) DC. | Shalparni                      | Shahjahanpur Herb         | 9,932          | 27,358       | N27°49.441, E080°02.275   |
| 133    | Plumbago zeylanica L. | Chitraka                       | Cantt. SJP Herb           | 9,994          | 27,482       | N27°51.925, E079°54.390   |
| 134    | Polygonon plebeium R. Br. | —                             | Pigara Pigari Herb        | 9,983          | 27,463       | N27°57.216, E079°50.901   |
| 135    | Poranopsis paniculata (Roxb.) Roberty | —                            | Mandanpura beat Hormed      | 10,118         | 27,722       | N28°23.832, E080°08.024   |
| 136    | Portulaca quadrifida L. | Laghu- Lonika                  | Tilhar range Herb         | 10,027         | 27,547       | N27°58.705, E079°43.084   |
| 137    | Premna mollissima Roth | Brihit- Agnim- anth            | Mandanpura Shrub          | 10,015         | 27,524       | N27°53.429, E079°40.540   |
| 138    | Putranjiva roxburghii Wall. | Putrajivak/Putranjiva         | Uchauliya Tree            | 9,935          | 27,365       | N27°49.506, E080°02.206   |
| 139    | Rauvolfia serpentina (L.) Benth. ex Kurz | Sarpagandha            | Mandanpura beat Hormed      | 10,117         | 27,720       | N28°23.764, E080°08.009   |

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| Sl. no. | Plant name               | Sanskrit name/ vernacular name | Place of collection/habit | Collection no. | Accession no. | GPS status    |
|--------|--------------------------|--------------------------------|---------------------------|----------------|--------------|---------------|
| 140    | Ricinus communis L.      | Erand/Rend                     | Tilhar range, Shrub      | 10,018         | 27,531       | N27°55.479    |
|        |                          |                                |                           |                |              | E079°48.711   |
| 141    | Ruellia prostrata Poir.  | —                              | Cantt. SJP, Herb         | 9,998          | 27,490       | N27°51.915    |
|        |                          |                                |                           |                |              | E079°54.385   |
| 142    | Santalum album L.        | Chandan                        | Uchauliya, Tree          | 9,971          | 27,438       | N27°49.504    |
|        |                          |                                |                           |                |              | E080°02.214   |
| 143    | Schleichera oleosa (Lour.) Oken | Koshamra                   | Garhi beat, Tree         | 10,094         | 27,675       | N28°23.058    |
|        |                          |                                |                           |                |              | E080°19.374   |
| 144    | Scoparia dulcis L.       | Mithipatti                     | Cantt. SJP, Herb         | 9,988          | 27,472       | N27°51.915    |
|        |                          |                                |                           |                |              | E079°54.385   |
| 145    | Semecarpus anacardium L. f. | Bhallatak/Bhilva     | Garhi beat, Tree         | 10,087         | 27,663       | N28°22.970    |
|        |                          |                                |                           |                |              | E080°19.279   |
| 146    | Senna alata (L.) Roxb.   | Dadmardan                      | Garhi beat, Shrub        | 10,063         | 27,617       | N28°14.712    |
|        |                          |                                |                           |                |              | E080°20.297   |
| 147    | S.occidentalis (L.) Link. | Kasamrda                       | Cantt. SJP, Herb         | 99,966         | 27,468       | N27°51.915    |
|        |                          |                                |                           |                |              | E079°54.385   |
| 148    | S. tora (L.) Roxb.       | Chakramard                     | Khutar range, Herb       | 10,060         | 27,611       | N28°11.137    |
|        |                          |                                |                           |                |              | E080°17.574   |
| 149    | Sesbania sesban (L.) Merr. | Jayanti/Dhaincha   | Tilhar range, Herbe   | 10,017         | 27,529       | N27°55.479    |
|        |                          |                                |                           |                |              | E079°48.711   |
| 150    | Shorea robusta Gaertn.   | Shal/Shakhu                    | Garhi beat, Tree         | 10,067         | 27,623       | N28°20.097    |
|        |                          |                                |                           |                |              | E080°21.466   |
| 151    | Sida acuta Burm. f.      | Bariyar                        | Cantt. SJP, Herb         | 9,989          | 27,474       | N27°51.915    |
|        |                          |                                |                           |                |              | E079°54.385   |
| 152    | S. cordata (Burm. f.) Borss. Waalk. | Bumi-Bala  | Cantt. SJP, Herb       | 10,006         | 27,503       | N27°51.927    |
|        |                          |                                |                           |                |              | E079°54.388   |
| 153    | S. cordifolia L.         | Bala/Bariyar                   | Tilhar range, Shrub      | 10,025         | 27,543       | N27°57.267    |
|        |                          |                                |                           |                |              | E079°45.151   |
| 154    | S. rhombifolia L.        | Mahabala                       | Pigara Pigari, Herb      | 9,978          | 27,452       | N27°57.095    |
|        |                          |                                |                           |                |              | E079°50.962   |
| 155    | Smilax ovalifolia Roxb. ex D. Don | —                         | Mandanpura beat         | 10,123         | 27,730       | N28°23.742    |
|        |                          |                                |                           |                |              | E080°07.659   |
| 156    | Solanum incanum L.      | Brihati (Lale, 2015)           | Uchauliya, Herb         | 9,951          | 27,400       | N27°49.306    |
|        |                          |                                |                           |                |              | E080°02.760   |
| 157    | S. nigrum L.             | Kakamachii                     | Uchauliya, Herb         | 9,933          | 27,360       | N27°49.440    |
|        |                          |                                |                           |                |              | E080°02.278   |
| 158    | S. viarum Dunal          | —                              | Garhi beat, Herb         | 10,075         | 27,640       | N28°20.129    |
|        |                          |                                |                           |                |              | E080°21.546   |
| 159    | S. virginianum L.        | Kantakari                      | Cantt. SJP, Herb         | 9,984          | 27,465       | N27°57.216    |
|        |                          |                                |                           |                |              | E079°51.040   |
| 160    | Solena heterophylla Lour. | Antamula                       | Garhi beat, Climber      | 10,082         | 27,656       | N28°20.221    |
|        |                          |                                |                           |                |              | E080°21.453   |
| 161    | Spondias pinnata (L. f.) Kurz | Amrataka                   | Uchauliya, Tree         | 9,972          | 27,440       | N27°49.504    |
|        |                          |                                |                           |                |              | E080°02.214   |
| 162    | Stereospermum che-lonoides (L.f.) DC. | Patla                  | Garhi beat, Tree         | 10,077         | 27,644       | N28°20.131    |
|        |                          |                                |                           |                |              | E080°21.607   |
| 163    | Streblus asper Lour. Skeels | Shakhotak/Shahera   | Uchauliya, Tree         | 9,936          | 27,367       | N27°49.506    |
|        |                          |                                |                           |                |              | E080°02.206   |
| 164    | Syzygium cumini (L.) Graham | Jambu                   | Uchauliya, Tree         | 9,966          | 27,430       | N27°49.504    |
|        |                          |                                |                           |                |              | E080°02.214   |
| 165    | S. salicifolium J. Graham | Nadi-Jambu                    | Madanapur, Tree         | 10,016         | 27,527       | N27°47.923    |
|        |                          |                                |                           |                |              | E079°46.880   |
| 166    | Tectona grandis L.f.     | Shak                           | Bilinda Pur, Tree       | 10,106         | 27,698       | N28°16.108    |
|        |                          |                                |                           |                |              | E080°11.431   |

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Exploration of Medicinal Plants in Shahjahanpur District of Uttar Pradesh: Need for Conservation

Accordingly, through present communication the details covering global distribution and quantification has been recorded. During various explorations in the state of Uttar Pradesh, such types of data have been based on extensive exploration of medicinal plants in the study areas. According to survey of medicinal plants in the areas and developing herbal nurseries in different places, Chhattisgarh and Uttarakhand have adapted conservation aspects for selected medicinal plants in different suitable localities due to the occurrence of wide forest areas.

Cultivation of medicinal plants is the alternate means for conservation through mixed cropping with agricultural crops, which is not in practice as introduction of timber plants like Shorea robusta Gaertn., Tectona grandis L.f. and Terminalia elliptica Willd.

Most of the conservation areas are confined to the Shal forests in the states of northeast India where people are vigorously involved in cultivation and commercialization of medicinal plants suitable for cultivation in the areas and developing herbal nurseries in different places, Chhattisgarh and Uttarakhand have adapted conservation aspects for selected medicinal plants in different suitable localities due to the occurrence of wide forest areas.

Unlike experimental experience in the states of northeast India where people are vigorously involved in cultivation and commercialization of medicinal plants suitable for cultivation in the areas and developing herbal nurseries in different places, Chhattisgarh and Uttarakhand have adapted conservation aspects for selected medicinal plants in different suitable localities due to the occurrence of wide forest areas.

Cultivation of medicinal plants is the alternate means for conservation through mixed cropping with agricultural crops, which is not in practice as introduction of timber plants like Shorea robusta Gaertn., Tectona grandis L.f. and Terminalia elliptica Willd.
Exploration of Medicinal Plants in Shahjahanpur District of Uttar Pradesh: Need for Conservation

and roadsides only where ground flora is occupied by herbal plants of, Curculigo orchioides Gaertn., and Helminthostachys zeylanica (L.) Hook. and shrubs of Helicteres isora L. There is need of motivation of farmers toward cultivation practice of medicinal plants in the waste land and agriculture farms only. Cultivation of Andrographis paniculata (Burm. f) Nees, Bacopa monnieri (L.) Wettst., Celastrus paniculatus Willd., and Oroxylum indicum (L.) Kurz can be made in the wasteland for commercial use of whole plant, root and bark which are being collected in an unplanned and nonscientific manner. The studied areas are mostly the forest hilly lands with less agriculture occupied by the local inhabitants and tribal migrants. Hence, conservation of medicinal plants in these areas is recommended through in situ conservation of highly viable medicinal plants and side by side cultivation of other medicinal plants as the options for developing sustainability of the medicinal plants in these areas.

However, 184 species of medicinal plants have been collected and identified from different GPS locations.

Acknowledgments

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उत्तर प्रदेश के शाहजहांपुर जिले के औषधीय पादपों का अन्वेषण: संरक्षण की आवश्यकता

उद्देश्य: उत्तर प्रदेश के शाहजहांपुर वन प्रभाग के औषधीय पादपों के अन्वेषण से है।

सामग्री और विधियाँ: जून 2017 के माह के दौरान शाहजहांपुर वन प्रभाग का अन्वेषण किया गया। विविध प्रजाति वानस्पतिक संरक्षण के दौरान उत्तर प्रदेश के शाहजहांपुर वन प्रभाग से आकर्षण एकत्रित किए गए।

परिणाम: अन्वेषण के दौरान, आमतौर पर होने वाले औषधीय पादपों और शास्त्रीय कार्यों के साथ-साथ वैद्यकीय शिक्षा निर्धारण प्रणाली और क्षेत्र में इसकी क्षमता को रिकॉर्ड किया गया। महत्वपूर्ण औषधीय पादप यथा एगले मरम्मलॉज (एल.), कोरिया, सेलेस्टस पेनिकुलाटस वाइल्ड., सेलेना एथ्रोफिका (एल.), उर्ब, टेम्परियम जेमेटिकम (एल.), डीसी, हेलिकेस इसोसिया एल., होलार्ना पब्सिस वाल्ल, एस जी. डॉन, औरोआइलम इंटिकम (एल.), कुर्ज, प्रेना मोलिसिया रॉयथ., सोलाना निफ्रम एल., टेम्परियम टोमेटोस वाइल्ड और अर्न ट्रिबुलास टेरेस्टिस एल. आदि को रिकॉर्ड किया गया जिनका व्यक्तिगत संरक्षण और खेती के माध्यम से फार्मासिउटिकल में उपयोग किया जा सकता है। इस क्षेत्र में औषधीय पादपों के शास्त्रीय प्रयोग की बहुत ही कम जानकारी उपलब्ध है। क्षेत्र के अन्य लोगों के बीच जागरूकता विकसित करने की आवश्यकता है।

निष्कर्ष: आयुर्वेद स्थान में संरक्षण हेतु होलार्ना पब्सिस वाल्ल, एस जी. डॉन और सेलेस्टस पेनिकुलाटस वाइल्ड., औरोआइलम इंटिकम (एल.), कुर्ज आदि पादपों से अध्ययन क्षेत्र भरा हुआ है।

मुख्य शाखा: संरक्षण, अन्वेषण, हेलिकेस इसोसिया एल., औषधीय पादप, उपयोगिता।