

Graveyards angiosperm diversity of Rajshahi city, Bangladesh with emphasis on medicinal plants

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Abstract: Angiosperm diversity in the graveyards of Rajshahi city corporation area has been studied. A total of 106 angiosperm species under 91 genera and 44 families were recorded. Of these, Magnoliopsida is represented by 96 species under 82 genera and 40 families while Liliopsida is represented by 10 species under 10 genera and 4 families. Moraceae is the largest family in Magnoliopsida represented by 6 species, and Arecaceae is the largest family in Liliopsida represented by 4 species. Habit analysis shows that herbs, shrubs, climbers and trees are represented by 27, 26, 9 and 44 species, respectively. Forty nine (49) medicinal plants have been documented with their uses for the cure of more than 45 diseases, and some of these are abscess, asthma, abortion, cough, cold, chicken pox, constipation, dysentery, diarrhea, diabetes, eczema, fever, and fracture of bone, headache, heart disease, itches, jaundice, menstrual disease, paralysis, piles, skin diseases, snake-bite, sex problems, toothache, vomiting, worm, wound and others.

Keywords: Angiosperm Diversity, Graveyards, Medicinal Plants, Rajshahi, Bangladesh

1. Introduction

Rajshahi is one of the oldest towns of Bangladesh. It was promoted to a district headquarter in 1772, a municipality in 1876, a city corporation in 1987 and a metropolitan city in 1992. The city has grown from a small population of 40,000 in 1951 to about 339,932 in 2001. Although Rajshahi was a Divisional headquarter during British period, partition of India in 1947, resulting continuous migration from the Indian side led to sudden population boom in the city. This is the fourth largest city in Bangladesh after Dhaka, Chittagong and Khulna. The city is famous for its high number of educational institutions and situated on the Bank of river Padma. The city is located between 24°21' north latitudes and between 88°28' and 88°38' east longitudes.

The city has a sub-tropical monsoon climate, typical of Bangladesh, which falls within a low rainfall zone of the country. 75 percent rainfall occurs during June-September. The annual rainfall is 1350mm. Temperature of the area is low in January varies from 9.0°C to 14.1°C. From February an increasing trend of temperature is found up to April and thereafter temperature start to decline. In April temperature varies from 22.6°C to 36.9°C. The mean relative humidity

is found to be low in March (65%) and high in July-September (88-89%) [2].

In every religion they have some sacred places for whom they take care and try to keep them out from external disturbances. The Muslim graveyards are one of such places. The graveyards are situated in such a place, which is outside human habitation and usually have some protected devices. The soil of graveyards is fertile due to the decomposition of human bodies. The places are undisturbed as a result plant can grow at their will. In some cases particular types of plants are planted. The management and types of plants grow depend upon the socio-economic pattern of the area [10].

The plants of Rajshahi city corporation area exhibit diverse habitats, such as wetland, scrub jungles, fallow lands etc. which support luxuriant formation of angiosperms and play a vital role in the local economy, environment and primary healthcare system. The importance of studying local floristic diversity has been realized and carried out in Bangladesh by Khan et al. [5], Rahman and Hassan [11], Uddin and Rahman [16], Khan and Huq [6], Uddin and Hassan [17]. Recently Tutul et al. [14, 15] and Rahman et al. [12, 13] conducted the inventorying of angiosperm diversity of Dhamrai Upazilla of Dhaka and Runcitia Sal forest of Bangladesh. The

present study will be made an inventory of the graveyard angiosperm species diversity of Rajshahi City Corporation and to document the medicinal uses of plant species by the local people.

2. Materials and Methods

All the specimens mentioned have been collected from three graveyards (Tikapara, Hatemkhan and Meherchandi) of Rajshahi city. A total of 106 species under 92 genera belonging to 44 families were collected and identified. Identification has been confirmed by consulting standard literatures [4], [7], [9] and matching with identified herbarium specimens at RUH and Bangladesh National Herbarium (DACB). Nomenclature has been updated following recent literatures including Ahmed et al. [1] and Pasha and Uddin [8]. The families are arranged (Table 1) according to Cronquist [3], and the species listed alphabetically under each family along with their local name, habit, phenology and voucher number. Emphasis has also been given to the economically important species particularly the medicinal plants used as a primary health-care. The information on the uses of medicinal plants has been gathered through interview of the local people. The voucher specimens are preserved at RUH for future reference.

3. Results and Discussion

Angiosperm diversity in the graveyards of Rajshahi city corporation area has been studied. A total of 106 angiosperm species under 91 genera and 44 families were recorded. Of these, Magnoliopsida is represented by 96 species under 82 genera and 40 families while Liliopsida is represented by 10 species under 10 genera and 4 families. Moraceae is the largest family in Magnoliopsida represented by 6 species, and Arecaceae is the largest family in Liliopsida represented by 4 species. Habit analysis shows that herbs, shrubs, climbers and trees are represented by 27, 26, 9 and 44 species, respectively (Table 1).

The number of species was highest in the Tikapara graveyard. The next number of species was present in the Hatem Khan graveyard. The lowest number of species was observed in the Meherchandi graveyard. Analysis of the species diversity showed 92.45% species were present in Tikapara, 74.52% were Hatem Khan and 40.56% plant species present were Meherchandi graveyard (Table 2).

Out of 44 families recorded from the study area, Seven dominant families are Moraceae, Caesalpiniaceae, Mimosaceae, Euphorbiaceae, Rutaceae, Solanaceae, Asteraceae, and Arecaceae. (Table 3) Analysis of the data based on families showed that leading plant species 13.63% belonged to Moraceae, 11.36% Caesalpiniaceae, 11.36% Mimosaceae, 13.63% Euphorbiaceae, 11.36% Rutaceae, 13.63% Solanaceae, 11.36% Asteraceae and 9.09% Arecaceae (Table 5).

Table 1. Graveyards angiosperm species of Rajshahi City

Taxa	Local name	Habit	Flowering and fruiting time	Voucher Specimens
MAGNOLIOPSIDA				
I . ANNONACEAE				
1. <i>Annona squamosa</i> L.	Ata	Tree	F1.& Fr.: Mar.- May	MR 71
2. <i>Polyalthia longifolia</i> Benth. & Hook.	Debdaru	Tree	F1. & Fr.: Mar.- Apr.	MR 05
II . MENISPERMACEAE				
3. <i>Stephania japonica</i> (Thunb.) Miers.	Akamandi	Climber	F1. & Fr.: Jan.-Dec.	MR 100
III. MORACEAE				
4. <i>Artocarpus heterophyllus</i> Lamk.	Kathal	Tree	F1. & Fr.: Nov.- Mar.	MR 34
5. <i>Ficus benghalensis</i> L.	Bot	Tree	F1.& Fr.: Jan.-Dec.	MR 56
6. <i>Ficus hispida</i> L. f.	Kakdumur	Tree	F1.& Fr.: Jan.-Dec.	MR 77
7. <i>Ficus racemosa</i> L.	Dumur	Tree	F1. & Fr.: Jan.-Dec.	MR 43
8. <i>Ficus religiosa</i> L.	Pakur	Tree	F1.& Fr.: Jan.-Dec.	MR 29
9. <i>Morus indica</i> L.	Tut	Tree	F1.& Fr.: Jan.-Oct.	MR 16
IV. NYCTAGINACEAE				
10. <i>Boerhaavia diffusa</i> L.	Punarnava	Climber	F1.& Fr.: Feb.-Nov.	MR 57
V . AMARANTHACEAE				
11. <i>Achyranthes aspera</i> L.	Apang	Herb	F1. & Fr.: Jan.-Dec.	MR 25
12. <i>Amaranthus lividus</i> L.	Noteyshak	Herb	F1.& Fr.: Jan.-Dec.	MR 22
13. <i>Amaranthus spinosus</i> L.	Kantanotey	Herb	F1.& Fr.: Jan.-Dec.	MR 23
VI. POLYGONACEAE				
14. <i>Polygonum barbatum</i> L.	Panimorich	Herb	F1.& Fr.: Jan.-Dec.	MR 44
15. <i>Polygonum hydropiper</i> L.	Chotopanimorich	Herb	F1.& Fr.: Jul.-Sep.	MR 47
16. <i>Polygonum orientale</i> L.	Boropanimorich	Shrub	F1. & Fr.: Jan.-Mar.	MR 39
17. <i>Polygonum plebejum</i> L.	Raniful	Herb	F1.& Fr.: Mar.-Aug.	MR 40
VII. BOMBACACEAE				
18. <i>Bombax ceiba</i> L.	Simul	Tree	F1. & Fr.: Jan.-Mar.	MR 50

VIII. MALVACEAE					
19. <i>Hibiscus rosa-sinensis</i> L.	Joba	Shrub	F1.& Fr.: Jan.-Dec.	MR 14	
20. <i>Thespesia populnea</i> (L.) Sol. ex Corr.	Parashpipul	Tree	F1.& Fr.: Jan.-Jun.	MR 70	
IX. CUCURBITACEAE					
21. <i>Coccinea cordifolia</i> (L.) Cogn.	Telakucha	Climber	F1.& Fr.: May-Oct.	MR 98	
X. SAPOTACEAE					
22. <i>Manilkara zapota</i> (L.) P. Van. Royen	Sopheda	Tree	F1.& Fr.: May-Jun.	MR 94	
XI. EBENACEAE					
23. <i>Diospyros perigrina</i> (Gar.) Gurke.	Deshigab	Tree	F1.& Fr.: Apr.-May	MR 55	
XII. CRASSULACEAE					
24. <i>Kalanchoe pinnata</i> (Lamk.) Pers.	Patharkuchi	Herb	F1.& Fr.: Jun.-Sep.	MR 49	
XIII. ROSACEAE					
25. <i>Rosa centifolia</i> L.	Golap	Shrub	F1.& Fr.: Jan.-Dec.	MR 65	
XIV. FABACEAE					
26. <i>Cajanus cajan</i> (L.) Huth.	Arhar	Shrub	F1.& Fr.: Oct.-Jan.	MR 23	
27. <i>Dalbergia sissoo</i> Roxb. ex A.P.DC.	Sissoo	Tree	F1.& Fr.: Feb.-Mar.	MR 61	
28. <i>Erythrina variegata</i> (L.) Merr.	Madar	Tree	F1.& Fr.: Feb.-Apr.	MR 20	
XV. CAESALPINIACEAE					
29. <i>Bauhinia acuminata</i> L.	Kanchan	Tree	F1.& Fr.: Mar.-Nov.	MR 19	
30. <i>Cassia sophera</i> L.	Kalkasundha	Shrub	F1.& Fr.: Dec.-Feb.	MR 93	
31. <i>Cassia alata</i> L.	Dadmardan	Shrub	F1.& Fr.: Jul.-Aug.	MR 52	
32. <i>Delonix regia</i> (Bojer) Raf.	Krishnachura	Tree	F1.& Fr.: Apr.-Jun.	MR 60	
33. <i>Tamarindus indica</i> L.	Tetul	Tree	F1.& Fr.: May-Jun.	MR 22	
XVI. MIMOSACEAE					
34. <i>Acacia nilotica</i> (L.) Willd.	Babla	Tree	F1.& Fr.: Jun.-Sep.	MR 41	
35. <i>Acacia catechu</i> Willd.	Khair	Tree	F1.& Fr.: May-Jun.	MR 24	
36. <i>Acacia auriculiformis</i> A. Cunn ex Benth.	Akashmoni	Tree	F1.& Fr.: Jul.-Sep.	MR 92	
37. <i>Albizia procera</i> (L.) Benth.	Koroi	Tree	F1.& Fr.: May-Sep.	MR 26	
38. <i>Mimosa pudica</i> L.	Lajjaboti	Climber	F1.& Fr.: Aug.-Nov.	MR 69	
XVII. LYTHRACEAE					
39. <i>Lagerstroemia speciosa</i> (L.) Pers.	Jarul	Tree	F1.& Fr.: Apr.-Jun.	MR 62	
40. <i>Lawsonia inermis</i> L.	Mehedi	Shrub	F1.& Fr.: May-Jun.	MR 74	
XVIII. MYRTACEAE					
41. <i>Eucalyptus camaldulensis</i> Hook.	Eucalyptus	Tree	F1.& Fr.: Aug.-Oct.	MR 28	
42. <i>Psidium guajava</i> L.	Piyara	Tree	F1.& Fr.: Jan.-Dec.	MR 36	
43. <i>Syzygium cumini</i> (L.) Skeel	Kalojam	Tree	F1.& Fr.: Mar.-May	MR 73	
XIX. PUNICACEAE					
44. <i>Punica granatum</i> L.	Dalim	Shrub	F1.& Fr.: Feb.-Mar.	MR 97	
XX. COMBRETACEAE					
45. <i>Terminalia arjuna</i> (Roxb.) Wt. & Arn.	Arjun	Tree	F1.& Fr.: Apr.-May	MR 32	
46. <i>Terminalia chebula</i> (Gaertn) Retz.	Haritaki	Tree	F1.& Fr.: Apr.-Aug.	MR 24	
XXI. EUPHORBIACEAE					
47. <i>Acalypha indica</i> Burm. f.	Muktajhuri	Herb	F1.& Fr.: Sep.-Jun.	MR 33	
48. <i>Croton bonplandianum</i> Baill.	Bonjhal	Herb	F1.& Fr.: Jan.-Dec.	MR 66	
49. <i>Euphorbia hirta</i> L.	Dudhia	Herb	F1.& Fr.: Oct.-May	MR 35	
50. <i>Phyllanthus reticulatus</i> Poir.	Panisitki	Shrub	F1.& Fr.: May-Jun.	MR 20	
51. <i>Phyllanthus emblica</i> L.	Amloki	Tree	F1.& Fr.: Mar.-May	MR 27	
52. <i>Ricinus communis</i> L.	Rendri	Shrub	F1.& Fr.: Jan.-Dec.	MR 75	
XXII. RHAMNACEAE					
53. <i>Zizyphus mauritiana</i> Lamk.	Boroi	Tree	F1.& Fr.: Sep.-Nov.	MR 38	
XXIII. VITACEAE					
54. <i>Cayratia trifolia</i> (L.) Domin	Banangur	Climber	F1.& Fr.: Jun.-Sep.	MR 39	
55. <i>Vitis quadrangularis</i> Wall.	Harzora	Climber	F1.& Fr.: Aug.-Sep.	MR 87	
XXIV. SAPINDACEAE					
56. <i>Litchi chinensis</i> Sonn.	Lichu	Tree	F1.& Fr.: Jan.-Feb.	MR 78	
XXV. ANACARDIACEAE					
57. <i>Mangifera indica</i> L.	Am	Tree	F1.& Fr.: Jan.-Mar.	MR 31	
XXVI. RUTACEAE					
58. <i>Aegle marmelos</i> (L.) Correa	Bel	Tree	F1.& Fr.: Apr.-May	MR 42	
59. <i>Citrus grandis</i> (L.) Osbek.	Jambura	Tree	F1.& Fr.: Feb.-Mar.	MR 95	
60. <i>Feronia limonia</i> (L.) Swingle	Kothbel	Tree	F1.& Fr.: Feb.-Mar.	MR 12	
61. <i>Glycosmis pentaphylla</i> (Roxb.) DC.	Atissorah	Shrub	F1.& Fr.: Nov.-Dec.	MR 59	
62. <i>Murraya paniculata</i> (L.) Jacq.	Kamini	Shrub	F1.& Fr.: May-Aug.	MR 45	
XXVII. MELIACEAE					
63. <i>Azadirachta indica</i> A.Juss.	Neem	Tree	F1.& Fr.: Mar.-Apr.	MR 38	
64. <i>Melia sempervirens</i> (L.) All.	Beraneem	Tree	F1.& Fr.: Mar.-May	MR 47	
65. <i>Swetenia mahagoni</i> L.	Mehagoni	Tree	F1.& Fr.: Mar.-Apr.	MR 58	

XXVIII. OXALIDACEAE					
66. <i>Biophytum sensitivum</i> (L.) APDC	Panilazuk	Herb	F1.& Fr.: Sep.-Mar.	MR 68	
67. <i>Oxalis corniculata</i> L.	Amrul	Herb	F1.& Fr.: Sep.-Mar.	MR 85	
XXIX. APIACEAE					
68. <i>Centella asiatica</i> (L.) Urban	Thankuni	Herb	F1.& Fr.: Feb.-May	MR 49	
XXX. APOCYNACEAE					
69. <i>Alstonia scholaris</i> (L.) R.Br.	Chatim	Tree	F1.& Fr.: Oct.-Feb.	MR 50	
70. <i>Catharanthus roseus</i> (L.) G.Don	Nayantara	Herb	F1.& Fr.: Jan.-Dec.	MR 51	
71. <i>Thevetia peruviana</i> K.(Pers.) Schum.	Kolkiphul	Shrub	F1.& Fr.: Jan.-Dec.	MR 90	
XXXI. ASCLEPIADACEAE					
72. <i>Calotropis procera</i> R.Br.	Akanda	Shrub	F1.& Fr.: Apr.-May	MR 27	
XXXII. SOLANACEAE					
73. <i>Cestrum nocturnum</i> L.	Hasnahena	Shrub	F1.& Fr.: Jan.-Dec.	MR 76	
74. <i>Datura metel</i> L.	Dhutra	Shrub	F1.& Fr.: Jul.-Dec.	MR 54	
75. <i>Nicotiana plumbaginifolia</i> Viv.	Bantamak	Herb	F1.& Fr.: Mar.-Jun.	MR 101	
76. <i>Physalis minima</i> L.	Kopalphutki	Herb	F1.& Fr.: Sep.-Dec.	MR 55	
77. <i>Solanum nigrum</i> L.	Titbegun	Herb	F1.& Fr.: Jan.-Dec.	MR 56	
78. <i>Solanum filicifolium</i> L.	Katabegun	Shrub	F1.& Fr.: Jan.-Dec.	MR 30	
XXXIII. CONVULVULACEAE					
79. <i>Ipomoea aquatica</i> Frosk.	Kolmi	Climber	F1.& Fr.: Nov.-Apr.	MR 67	
80. <i>Ipomoea fistulosa</i> Martins ex Choisy.	Dholkolmi	Shrub	F1.& Fr.: Jan.-Dec.	MR 58	
XXXIV. BORAGINACEAE					
81. <i>Heliotropium indicum</i> L.	Hatisur	Herb	F1.& Fr.: Jan.-Dec.	MR 63	
XXXV. VERBENACEAE					
82. <i>Clerodendrum viscosum</i> Vent.	Vhat	Shrub	F1.& Fr.: Feb.-Mar.	MR 60	
83. <i>Lantana camara</i> L.	Lantana	Shrub	F1.& Fr.: Sep.-Dec.	MR 82	
84. <i>Vitex negundo</i> L.	Nishinda	Shrub	F1.& Fr.: May-Apr.	MR 96	
XXXVI. LAMIACEAE					
85. <i>Leucas lavendulaefolia</i> Sm.	Setodron	Herb	F1.& Fr.: Aug.-Apr.	MR 62	
86. <i>Ocimum sanctum</i> L.	Tulshi	Shrub	F1.& Fr.: Apr.-Jun.	MR 99	
XXXVII. OLEACEAE					
87. <i>Nyctanthes arbor-tristis</i> L.	Sheuli	Shrub	F1.& Fr.: Apr.-Feb.	MR 02	
XXXVIII. ACANTHACEAE					
88. <i>Andrographis paniculata</i> (Burm.f.)Wall exNees.	Kalomegh	Herb	F1.& Fr.: Jan.-Mar.	MR 54	
89. <i>Adhatoda vasica</i> Nees in Wall.	Basak	Shrub	F1.& Fr.: May-Jun.	MR 03	
XXXIX. RUBIACEAE					
90. <i>Anthocephalus chinensis</i> (Lamk.) Rich. ex Walp.	Kadam	Tree	F1.& Fr.: Dec.-Jul.	MR 63	
91. <i>Gardenia jasminoides</i> Ellis.	Gandharaj	Shrub	F1.& Fr.:	MR 53	
92. <i>Ixora coccinea</i> L.	Rangan	Shrub	F1.& Fr.: Jan.-Dec.	MR 48	
XL. ASTERACEAE					
93. <i>Eclipta alba</i> L.	Kalokeshi	Herb	F1.& Fr.: Jul.-Sep.	MR 65	
94. <i>Mikania cordata</i> (Burm.f.) Robinson	Asamlata	Climber	F1.& Fr.: Oct.-Feb.	MR 89	
95. <i>Tridax procumbens</i> L.	Tridhara	Herb	F1.& Fr.: Jan.-Dec.	MR 37	
96. <i>Tagetes patula</i> L.	Ghada	Herb	F1.& Fr.: Dec.-Mar.	MR 01	
97. <i>Vernonia patula</i> (Dryand.) Merril.	Kuksim	Herb	F1.& Fr.: Jan.-Dec.	MR 68	
LILIOPSIDA					
XLI. POACEAE					
98. <i>Bambusa balcooa</i> Schard.	Bansh	Tree	F1.& Fr.:	MR 88	
XLII. ARECACEAE					
99. <i>Areca catechu</i> L.	Khair	Tree	F1.& Fr.: Mar.-May	MR 102	
100. <i>Borassus flabellifer</i> L.	Tal	Tree	F1.& Fr.: Mar.-Apr.	MR 71	
101. <i>Cocos nucifera</i> L.	Narikel	Tree	F1.& Fr.: Mar.-Jul.	MR 103	
102. <i>Phoenix sylvistris</i> L.	Khejur	Tree	F1.& Fr.: Feb.-Apr.	MR 104	
XLIII. ARACEAE					
103. <i>Alocasia indica</i> (Roxb.) Schott.	Mankachu	Herb	F1.& Fr.: Aug.-Oct.	MR 74	
104. <i>Colocasia esculenta</i> (L.) Schott.	Kochu	Herb	F1.& Fr.: Dec.-Mar.	MR 84	
XLIV. LILIACEAE					
105. <i>Aloe barbadensis</i> Mill.	Ghritakumari	Herb	F1.& Fr.: Jul.-Dec.	MR 91	
106. <i>Smilax zeylanica</i> L.	Kumarica	Climber	F1.& Fr.: Jul.-Oct.	MR 86	

Jan.=January, Feb.=February, Mar.=March, Apr.=April, May=May, Jun.=June, Jul.=July, Aug.=August, Sep.=September, Oct.=October, Nov.=November, Dec.=December

Table 2. Analytical data of species diversity of three graveyards

Study area	No. of species	Percentage	Total number of species
Tikapara	98	92.45%	106

Hatem Khan	79	74.52%	106
Meherchandi	43	40.56%	106

Table 3. Seven dominant plant families in the graveyards of Rajshahi city

Family	No of genera	No of species	Percentage	Total number of family
Moraceae	3	6	13.63%	44
Caesalpiniaceae	4	5	11.36%	44
Mimosaceae	3	5	11.36%	44
Euphorbiaceae	5	6	13.63%	44
Rutaceae	5	5	11.36%	44
Solanaceae	5	6	13.63%	44
Asteraceae	5	5	11.36%	44
Arecaceae	4	4	9.09%	44

Table 4. Medicinal plants used by local people of Rajshahi city

Sl. no.	Plant species	Family name	Part(s) used	Diseases to be treated
1	<i>Achyranthes aspera</i> L.	Amaranthaceae	L, B, F	Sciatica, abortion, eczema and wound.
2	<i>Adhatoda vasica</i> Wall in Nees.	Acanthaceae	L, B	Cough, asthma, vomiting and worm
3	<i>Alstonia scholaris</i> Br.	Apocynaceae	B, LA	Fever, rheumatism, dysentery and earache.
4	<i>Amaranthus spinosus</i> L.	Amaranthaceae	WP	Asthma and cold fever.
5	<i>Aloe vera</i> L.	Liliaceae	L, M	Beautification, tonic, anthelmintic, wound and itches.
6	<i>Aegle marmelos</i> (L.) Correa.	Rutaceae	F, L	Babies dysentery, digestive, tonic, stomachic, abscess and fever.
7	<i>Annona squamosa</i> L.	Annonaceae	L, B, R, F	Dysentery, tonic, diarrhea, abscess.
8	<i>Andrographis paniculata</i> (Burm.f.) Wall. ex Nees	Acanthaceae	L, WP	Wound, ringworm, itches, fever, dysentery, diarrhea and tonic.
9	<i>Anthocephalus chinensis</i> (Lamk.) Rich. ex Walp.	Rubiaceae	L, B	Tonic, wound and mouth ulcer.
10	<i>Artocarpus heterophyllus</i> Lamk.	Moraceae	L, B	Wound, asthma, itches and menstrual problems.
11	<i>Argemone mexicana</i> L.	Papaveraceae	S, R, LA	Fever, cold, jaundice, diabetes, tonic, diuretic, pain killer, wound, skin disease and itches.
12	<i>Asparagus racemosus</i> L.	Liliaceae	B, R	Tonic, blood dysentery, diabetes, jaundice, diarrhea, promotes lactation in mother, wound and itches.
13	<i>Azadirachta indica</i> A. Juss.	Meliaceae	L, F	Worm, eczema, ringworm, itches and lice killer.
14	<i>Bombax ceiba</i> L.	Bombacaceae	B, R	Wound, itches, dysentery, diarrhea, excessive menstrual discharge and diabetes.
15	<i>Cassia alata</i> L.	Caesalpiniaceae	L	Ringworm, eczema and dad.
16	<i>Cassia sophera</i> L.	Caesalpiniaceae	L, R	Fever, diuretic, ringworm and sore.
17	<i>Cajanus cajan</i> (L.) Huth.	Fabaceae	L, R	Jaundice and diabetes.
18	<i>Centella asiatica</i> (L.) Urban	Apiaceae	L, WP	Dysentery, headache, itches and eczema.
19	<i>Citrus grandis</i> (L.) Osbeck.	Rutaceae	B, F	Cough and influenza.
20	<i>Coccinia grandis</i> L.	Cucurbitaceae	L, R	Fever, diabetes, cough, asthma and dysentery.
21	<i>Cocos nucifera</i> L.	Arecaceae	R, F	Cooling, cholera, diarrhea, dysentery, diuretic and menstrual disease.
22	<i>Calotropis procera</i> Br.	Asclepiadaceae	L, R, LA	Pain, dysentery and injury,
23	<i>Datura metel</i> L.	Solanaceae	L	Wound and earache.
24	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	L, W	Gonorrhoea, wound, itches, abscess and vomiting.
25	<i>Eclipta alba</i> (L.) Hassk.	Asteraceae	L, WP	Wound, itches, skin disease, colour of hairs, jaundice, asthma and gall bladder stone.
26	<i>Erythrina variegata</i> L.	Fabaceae	L, B, R	Blood dysentery, earache, toothache, fever and menstrual discharges.
27	<i>Feronia limonia</i> (L.) Sw.	Rutaceae	L, F	Dysentery, vomiting, blood dysentery, tonic, diuretic and diarrhea.
28	<i>Ficus benghalensis</i> L.	Moraceae	BU, LA	Diarrhea, dysentery, rheumatism and toothache.

29	<i>Glycosmis pentaphylla</i> (Retz.) A. DC.	Rutaceae	L, F	Dysentery, cough, fever, jaundice, rheumatism, eczema and skin disease.
30	<i>Justicia gendarussa</i> L.	Acanthaceae	L	Asthma, rheumatism, wound and itches.
31	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	L	Cold, cough, diabetes, diuretic, blood dysentery and wound.
32	<i>Lawsonia inermis</i> L.	Lythraceae	L	Wound, burning sensation, dandruff and foot sore.
33	<i>Mangifera indica</i> L.	Anacardiaceae	L, B, SD	Burning sensation, fever, toothache, dysentery and diabetes.
34	<i>Mimosa pudica</i> L.	Mimosaceae	L, SH, R	Fever and dysentery.
35	<i>Ocimum sanctum</i> L.	Lamiaceae	L, R	Cold, cough, itches, ringworm, earache, wound and fever.
36	<i>Oxalis corniculata</i> L.	Oxalidaceae	L	Cough, scabies, itches, dysentery, anemia, piles, dyspepsia and fever.
37	<i>Punica granatum</i> L.	Punicaceae	F, R	Dysentery, diarrhea and worm.
38	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	F	Tonic, diuretic, vomiting, cold, cough, burning sensation, dysentery, anemia, jaundice, dyspepsia and hair tonic.
39	<i>Psidium guajava</i> (L.) Bat.	Myrtaceae	L, S, F	Dysentery, toothache, vomiting and diarrhea.
40	<i>Rauwolfia serpentina</i> Benth.	Apocynaceae	R	Blood pressure, tonic, diarrhea, dysentery, colic and fever.
41	<i>Ricinus communis</i> L.	Euphorbiaceae	L, SD	Headache and rheumatism.
42	<i>Syzygium cumini</i> (L.) Skeel.	Myrtaceae	B, SD	Dysentery, wound and diabetes.
43	<i>Smilax zeylanica</i> L.	Liliaceae	R	Blood dysentery and abscess.
44	<i>Tamarindus indica</i> L.	Caesalpiniaceae	L, F	Burning sensation, dyspepsia, appetite, digestive, cold, tonic and dysentery.
45	<i>Terminalia chebula</i> (Gaertn.) Retz.	Combretaceae	F	Wound, worm, rheumatism, vomiting, urinary disease and dysentery.
46	<i>Terminalia arjuna</i> (Roxb.) Wt. & Arn	Combretaceae	L, SH	Heart disease, burning sensation and dyspepsia.
47	<i>Vitis quadrangularis</i> Wall.	Vitaceae	S	Bone fracture and gout.
48	<i>Vitex negundo</i> L.	Verbenaceae	L, R	Cold, cough, asthma, tonic, fever and diuretic.
49	<i>Zizyphus mauritiana</i> Lamk.	Rhamnaceae	L, S	Blood dysentery, wound and headache.

L=Leaf, S=Stem, R=Root, SD=Seed, LA=Latex, WP=Whole plant, SH=Shoot, F=Fruit, B=Bark, BU=Bud, W=Wood

Table 5. Analysis of the data based on habit showed that leading medicinal plants species

Habit	No. of species	Percentage	Total number of species
Herbs	11	22.44%	49
Shrubs	9	18.36%	49
Climbers	7	14.28%	49
Trees	23	46.93%	49

Medicinally important plants: The important medicinal plants in the graveyards of Rajshahi city corporation area were carried out. A total of 49 plant species belonging to 47 genera and 33 families were collected and identified. Most of the local people in the study area are poor and illiterate. In one hand, these people are out of the reach of modern medicines and on other hand, the market price of most available medicines are very expensive. As a result, these medicinal plants are used by them to cure following the diseases, especially for abscess, asthma, abortion, cough, cold, chicken pox, constipation, dysentery, diarrhea, diabetes, eczema, fever, fracture of bone, headache, heart disease, itches, jaundice, menstrual disease, paralysis, piles, skin diseases, snake-bite, sex problems, toothache, vomiting, worm, wound and others. Different plant parts of

different spp. are used as medicine for treating various diseases; bark of 15, leaf of 39, fruit of 9, root of 11, seed of 1, wood of 1, latex of 4, stem of 5, mucilage of 1, and whole plant of 3 species were used as medicine (Table 4).

Analysis of the data based on habits showed that leading medicinal plant species 22.44% belonged to herbs, 18.36% shrubs, 14.28% climbers and 46.93% trees (Table 5).

4. Conclusion

Angiosperm diversity in the graveyards of Rajshahi city corporation area has been studied. A total of 106 angiosperm species under 91 genera and 44 families were recorded. The graveyards of Tikapara and Hatem Khan were two protected areas. The plants, which grow naturally or planted in these graveyards, were not destroyed by

someone. That is why huge quantity of plant species was observed here. Its biodiversity was developed. On the other hand Meherchandi graveyard was an open place. It was comparatively a new graveyard. Plants were observed in a lesser extent due to grazing in this graveyard. As a result, biodiversity of Meherchandi graveyard was comparatively less than Tikapara and Hatem Khan Graveyards. A total of 49 medicinal plant species belonging to 47 genera and 33 families were collected and recorded for their use in various ailments.

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