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Raghupathi B
Department of Floriculture and Landscape Architecture, Faculty of Horticulture Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia, West Bengal, India

Subhendu S Gantait
Department of Floriculture and Landscape Architecture, Faculty of Horticulture Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia, West Bengal, India

Corresponding Author:
Raghupathi B
Department of Floriculture and Landscape Architecture, Faculty of Horticulture Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia, West Bengal, India

Studies on different press drying techniques for dehydration of ornamental Foliages

Raghupathi B and Subhendu S Gantait

Abstract
Dry flowers are attaining immense popularity as they are natural, eco-friendly, inexpensive, long lasting, bio-degradable and retains their ornamental worth irrespective of the spell. Experiment was conducted with an objective to standardize the press drying techniques for dehydration of ornamental foliages. From the results of experiment, it can be concluded that iron press found excellent technique for press drying of *Rosa spp.*, *Swietenia mahagoni* and *Lagerstroemia speciosa* leaves. Tiles pressed in microwave oven for 1 min found finest technique for press drying of *Anthocephalus cadamba* leaves, 2 min found suitable for *Mussaenda erythrophylla* leaves, 3 min found appropriate for *Hibiscus rosa-sinensis* and *Areca lutescens* leaves, 4 min found ideal for *Tagetes spp.* leaves. Both iron press drying and tiles pressed in microwave oven for 3 min found appropriate for *Acacia auriculiformis* leaves and 4 min found ideal for press drying of *Phoenix roebeleni* leaves. The dried leaves can be utilized for value added products preparations.

Keywords: Press drying, iron press, wooden press, microwave press, dehydration

Introduction
The art of pressing and drying ornamentals is a very old and ancient art of practice. Drying and preserving of flowers and plants has been considered as hundreds years of fine art. In Egyptian pyramids mummified bodies were encased with scented dried flowers and aromatic herb garlands. The "Japanese preserved flower art" of permanent designs to save the exquisite beauty of live flora centuries ago is well-known as Oshibana (Christie, 2010) [1]. Later Japanese spread the flower preserving art to Victorian England because of their long lasting beautiful appearance. The monks dried flowers, foliages and herbs for use in ornamental motifs or for making dyes to colour their hand-printed books during the middle ages. For centuries ago, dried flower arrangements have been popular in Europe i.e. as early as 1700 AD and Colonial Americans used dried flowers to brighten their homes especially during the dark winter months. For the first time flowers were commercially dried in Germany though it was well known in the past (Jean and Lesley, 1982) [3]. Various press drying techniques were practised for dehydration of plant samples such as wooden press, iron pres, book press and pressed samples in microwave and hot air oven drier etc. Press drying is a method used to preserve the plants to use on greeting cards, book marks, stationery etc (Murugan *et al*., 2007) [6]. The present investigation was conducted with an objective to standardize the press drying techniques for dehydration of ornamental foliages.

Materials and Methods
The experiment was carried out in Dry Flower Laboratory at Department of Floriculture and Landscape Architecture, Faculty of Horticulture, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia (Dist.), West Bengal-741252 during the period of 2017 to 2019. Fresh matured leaves were collected within the university campus free from blemishes, pest and disease in the morning after dew/moisture evaporation. Experiment was laid out in CRD with five replications and eight treatments. Treatments were set based on trial-and-error method for all the foliage. 10 different foliages were used for experiment purpose *viz*., mussaenda, kadamba tree, rose, hibiscus, mahogany tree, earpod wattle tree, pride of India tree, pygmy date palm, marigold and areca palm. The following observations were recorded from the experiment i.e. fresh weight of sample (g), dry weight of sample (g), moisture content loss (%) and dried samples were given subjective scores on average 10 points scale with reference to ornamental values *viz*., colour, texture, brittleness and appearance/shape retention. Based on cumulative score, ranks were given and the best treatment combinations were worked out (Raj and Gupta, 2005) [7].

Results and Discussion

1. *Mussaenda erythrophylla*

The data presented in Table-1 revealed that greatest moisture loss percent in different press dried mussaenda leaves was recorded in T_5 (74.20%), which is statistically far with T_2 (60.15%). Highest sensory score for colour noted in T_3 (6.30), while least was found in T_8 (3.20). Utmost score for texture was observed in T_6 (7.0) and least noted in T_2 (4.30). Principal score for brittleness was observed in T_6 (7.30), which is significantly far with T_5 (4.20). Uppermost score for appearance was recorded in T_3 (6.80) and lower most noted in T_8 (3.30).

Table 1: Effect of press drying on mussaenda (*Mussaenda erythrophylla*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	0.44	0.16	63.66	3.90	5.60	5.40	6.70
T_2	1.05	0.42	60.15	5.40	4.30	5.00	6.20
T_3	0.87	0.34	61.11	6.30	6.70	5.90	6.80
T_4	1.12	0.34	69.40	5.80	6.30	5.50	5.80
T_5	1.00	0.26	74.20	5.40	5.80	4.20	5.90
T_6	1.05	0.40	61.62	5.50	7.00	7.30	4.00
T_7	1.21	0.44	63.85	5.80	6.60	6.70	5.70
T_8	1.06	0.35	67.01	3.20	5.00	4.40	3.30
S.Em (±)	0.01	0.01	0.65	0.05	0.06	0.05	0.05
CD at 5%	0.03	0.01	1.87	0.15	0.17	0.15	0.16

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 2 min, T_4- Tiles pressed in MO for 3 min, T_5- Tiles pressed in MO for 4 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

2. *Anthocephalus cadamba*

In different press dried techniques of kadamba tree leaves (Table-2) maximum moisture loss percent was noted in T_8 (66.31%) and minimum recorded in T_2 (55.61%). Highest score for colour was recorded in T_3 (6.20), which is statistically far with T_8 (2.20). Uppermost score for texture found in T_6 (7.80), while lower most was recorded in T_2 (4.40). Chief brittleness score was noted in T_6 (8.0), which is statistically far with T_5 (4.40). Highest score for appearance was noted in T_1 (6.60) and least recorded in T_8 (2.40).

Table 2: Effect of press drying on kadamba tree (*Anthocephalus cadamba)* leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	1.33	0.52	61.08	3.60	6.00	6.00	6.60
T_2	1.28	0.57	55.61	4.80	4.40	5.00	4.60
T_3	1.73	0.67	61.16	6.20	7.20	6.00	6.40
T_4	1.68	0.62	63.16	5.80	6.60	5.00	5.80
T_5	1.41	0.51	64.11	5.60	6.40	4.40	5.60
T_6	1.65	0.62	62.16	4.40	7.80	8.00	3.60
T_7	1.61	0.58	63.97	3.60	7.40	7.40	3.20
T_8	1.35	0.46	66.31	2.20	7.00	5.60	2.40
S.Em (±)	0.02	0.01	0.62	0.04	0.07	0.06	0.05
CD at 5%	0.04	0.02	1.80	0.12	0.19	0.17	0.13

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 1 min, T_4- Tiles pressed in MO for 2 min, T_5- Tiles pressed in MO for 3 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

3. *Rosa spp.*

A perusal of data on Table-3 revealed the effect of different press drying techniques on rose leaves. Chief moisture loss percent was recorded in T_5 (55.87%), which is significantly far with T_3 (38.06%). Maximum score for colour was found in T_2 (8.40) and minimum recorded in T_5 and T_8 (5.0). Uppermost score for texture was noted in T_2 (7.40), while lower most found in T_5 (5.40). Utmost score for brittleness was recorded in T_6 (7.80) and least found in T_5 (5.40). Highest score for appearance was noted in T_2 (8.40), which is statistically far with T_3 (5.60).

Table 3: Effect of press drying on rose (*Rosa spp.)* leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	0.58	0.27	52.59	7.40	6.40	7.20	7.60
T_2	0.43	0.22	48.17	8.40	7.40	7.60	8.40
T_3	0.44	0.27	38.06	6.60	7.00	7.40	5.60
T_4	0.47	0.25	47.66	5.60	6.40	7.00	6.00
T_5	0.52	0.23	55.87	5.00	5.40	5.40	6.80
T_6	0.38	0.23	40.94	5.40	6.40	7.80	6.40
T_7	0.38	0.19	49.82	7.00	7.00	7.40	7.40
T_8	0.44	0.20	55.48	5.00	5.80	6.60	6.80
S.Em (±)	0.00	0.00	0.49	0.06	0.06	0.07	0.07
CD at 5%	0.01	0.01	1.43	0.17	0.18	0.20	0.19

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 2 min, T_4- Tiles pressed in MO for 3 min, T_5- Tiles pressed in MO for 4 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

4. *Hibiscus rosa-sinensis*

Peak moisture loss percent in different press dried techniques of hibiscus leaves (Table-4) was noted in T_8 (78.22%), which is statistically far with T_2 (62.94%). Colour score found maximum in T_3 (8.40), while minimum was noted in T_8 (4.0). Texture score was found utmost in T_5 (8.0), which is significantly far with T_8 (4.0). Brittleness score found utmost in T_3 (8.0) and least was observed in T_8 (5.20). Supreme score for appearance was observed in T_4 and T_5 (8.0), which is statistically far with T_8 (4.60).

Table 4: Effect of press drying on hibiscus (*Hibiscus rosa-sinensis*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	1.41	0.43	69.40	6.20	6.00	6.20	6.60
T_2	1.20	0.44	62.94	5.80	6.00	6.00	6.80
T_3	1.03	0.31	70.09	8.40	7.40	8.00	7.60
T_4	1.03	0.28	73.41	8.00	7.80	7.60	8.00
T_5	0.96	0.24	75.13	7.40	8.00	6.00	8.00
T_6	0.98	0.26	73.32	6.20	6.80	7.40	6.40
T_7	0.82	0.21	75.12	4.80	4.80	6.40	5.40
T_8	0.79	0.17	78.22	4.00	4.00	5.20	4.60
S.Em (±)	0.01	0.00	0.73	0.06	0.06	0.06	0.06
CD at 5%	0.03	0.01	2.10	0.17	0.17	0.18	0.18

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 2 min, T_4- Tiles pressed in MO for 3 min, T_5- Tiles pressed in MO for 4 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

5. *Swietenia mahagoni*

A perusal of data on different press drying techniques of mahogany tree leaves (Table-5) revealed that chief moisture loss percent was noted in T_1 (52.33%), which is significantly far with T_3 (34.93%). Supreme score for colour was recorded in T_2 (8.60), which is statistically far with T_1 (3.30). Uppermost texture score was noted in T_1 (8.20), while lower most found T_3 (5.70). Highest score for brittleness was recorded in T_2 (8.50), whereas least observed in T_5 (5.30). Appearance score was recorded utmost in T_2 and T_5 (8.40) and least found in T_1 (5.0).

Table 5: Effect of press drying on mahogany tree (*Swietenia mahagoni*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	0.71	0.34	52.33	3.30	8.20	8.10	5.00
T_2	0.73	0.38	48.24	8.60	7.40	8.50	8.40
T_3	0.90	0.59	34.93	8.20	5.70	7.80	7.20
T_4	0.87	0.53	38.71	8.30	7.60	6.60	7.70
T_5	0.77	0.41	46.94	8.40	7.20	5.30	8.40
T_6	0.60	0.37	38.73	6.40	7.30	8.40	6.90
T_7	0.69	0.41	41.52	6.30	7.50	8.00	7.40
T_8	0.71	0.40	43.58	5.90	6.30	5.80	6.70
S.Em (±)	0.01	0.01	0.42	0.07	0.07	0.07	0.07
CD at 5%	0.02	0.01	1.21	0.19	0.20	0.20	0.20

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 2 min, T_4- Tiles pressed in MO for 3 min, T_5- Tiles pressed in MO for 4 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

6. *Acacia auriculiformis*

The effect of different press drying techniques on earpod wattle tree leaves (Table-6) shows that maximum moisture loss percent was recorded in T_5 (58.68%) and minimum noted in T_1 (49.94%). Supreme score for colour was recorded in T_2 (8.40), which is significantly far with T_8 (4.40). Utmost texture score was noted in T_2 and T_5 (8.0), whereas low most observed in T_8 (6.20). Chief score for brittleness was noted in T_2 and T_6 (8.0), which is statistically far with T_8 (4.40). Uppermost appearance score was observed in T_2 (8.40) and lower most found in T_8 (4.60).

Table 6: Effect of press drying on earpod wattle tree (*Acacia auriculiformis*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	0.73	0.36	49.94	6.80	7.60	7.40	8.00
T_2	0.64	0.30	52.17	8.40	8.00	8.00	8.40
T_3	0.67	0.32	51.89	7.60	6.80	7.80	7.40
T_4	0.58	0.27	54.61	8.20	7.80	7.40	8.20
T_5	0.61	0.25	58.68	8.00	8.00	5.60	7.80
T_6	0.62	0.29	52.55	6.80	7.80	8.00	7.00
T_7	0.48	0.22	54.77	5.40	7.40	6.60	5.60
T_8	0.57	0.24	57.54	4.40	6.20	4.40	4.60
S.Em (±)	0.01	0.00	0.54	0.06	0.07	0.06	0.07
CD at 5%	0.02	0.01	1.56	0.19	0.20	0.19	0.19

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 2 min, T_4- Tiles pressed in MO for 3 min, T_5- Tiles pressed in MO for 4 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

7. Lagerstroemia speciosa

Utmost moisture loss percent was recorded in T_8 (66.04%), which is statistically far with T_6 (57.66%) in different press dried techniques of lagerstroemia tree leaves (Table-7). Peak

score for colour was noted in T_2 (7.40), which is significantly far with T_8 (3.60). Texture score found maximum in T_2 (8.40), whereas minimum was noted in T_3 (4.80). Brittleness score varied from 8.0 (T_2, T_3 and T_6) to 5.60 (T_5). Greatest appearance score was recorded in T_2 (8.0), which is significantly far with T_8 (3.40).

Table 7: Effect of press drying on pride of India tree (*Lagerstroemia speciosa*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	1.24	0.46	63.01	6.80	7.20	7.40	6.40
T_2	1.53	0.61	59.74	7.40	8.40	8.00	8.00
T_3	1.15	0.48	58.49	7.20	4.80	8.00	6.80
T_4	1.23	0.49	60.48	6.80	6.20	7.40	6.40
T_5	1.05	0.37	64.80	5.40	6.60	5.60	5.00
T_6	1.32	0.56	57.66	5.00	7.20	8.00	5.20
T_7	1.25	0.48	61.82	4.40	7.40	6.60	3.60
T_8	1.66	0.56	66.04	3.60	7.60	6.20	3.40
S.Em (±)	0.01	0.01	0.61	0.06	0.07	0.07	0.05
CD at 5%	0.04	0.02	1.77	0.16	0.20	0.20	0.15

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 1 min, T_4- Tiles pressed in MO for 2 min, T_5- Tiles pressed in MO for 3 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

8. *Phoenix roebeleni*

The effect of different press drying techniques on pygmy date palm leaves (Table-8) revealed that maximum percent of moisture loss was noted in T_1 (46.70%), which is statistically far with T_6 (38.77%). Highest sensory score for colour was recorded in T_2 and T_3 (8.20), which are significantly far with T_8 (5.80). Uppermost texture score was recorded in T_2 (8.20), whereas lower most observed in T_8 (6.60). Chief score for brittleness was noted in T_6 (8.40), which is significantly far with T_8 (5.80). Principal score for appearance was noted in T_2 and T_4 (8.0), which is significantly far with T_8 (6.0).

Table 8: Effect of press drying on pygmy date palm (*Phoenix roebeleni*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	2.27	1.21	46.70	6.80	7.60	7.40	6.80
T_2	2.70	1.56	42.25	8.20	8.20	8.00	8.00
T_3	2.76	1.65	40.19	8.20	7.00	7.00	7.60
T_4	2.52	1.41	43.89	7.80	8.00	7.80	8.00
T_5	2.68	1.47	45.36	7.00	7.40	6.40	7.20
T_6	2.46	1.50	38.77	7.20	7.60	8.40	6.80
T_7	2.34	1.36	42.03	6.40	7.20	7.60	7.60
T_8	2.29	1.24	46.24	5.80	6.60	5.80	6.00
S.Em (±)	0.02	0.01	0.43	0.07	0.07	0.07	0.07
CD at 5%	0.07	0.04	1.25	0.20	0.21	0.20	0.20

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 3 min, T_4- Tiles pressed in MO for 4 min, T_5- Tiles pressed in MO for 5 min, T_6- Tiles pressed in HAO for 20 hrs, T_7- Tiles pressed in HAO for 30 hrs, T_8- Tiles pressed in HAO for 40 hrs)

9. Tagetes spp.

The data presented in Table-9 indicates that percent moisture loss was found maximum in T_8 (83.66%), which is significantly far with T_6 (73.75%) in different press dried techniques of marigold leaves. Utmost sensory score for colour was recorded in T_3 (8.40), which is statistically far with T_6 (4.0). Highest texture score found in T_4 (7.60) and least was observed in T_6 (3.40). Peak brittleness score was recorded in T_3 (7.60), which is significantly far with T_2 (4.60). Uppermost score for appearance was noted in T_3 (8.0), which is statistically far with T_2 (4.20).

Table 9: Effect of press drying on marigold (*Tagetes spp.*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	0.87	0.16	81.92	4.80	5.40	6.60	5.00
T_2	0.77	0.15	80.67	4.40	4.80	4.60	4.20
T_3	0.59	0.13	77.61	8.40	6.40	7.60	8.00
T_4	0.88	0.17	80.68	8.00	7.60	7.00	7.60
T_5	0.89	0.15	82.86	7.00	5.60	5.60	6.80
T_6	0.67	0.18	73.75	4.00	3.40	7.40	4.60
T_7	0.54	0.11	79.56	5.00	4.40	6.80	5.40
T_8	0.75	0.12	83.66	6.20	6.00	4.80	6.00
S.Em (±)	0.01	0.00	0.80	0.06	0.06	0.06	0.06
CD at 5%	0.02	0.00	2.30	0.18	0.17	0.18	0.18

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 3 min, T_4- Tiles pressed in MO for 4 min, T_5- Tiles pressed in MO for 5 min, T_6- Tiles pressed in HAO for 18 hrs, T_7- Tiles pressed in HAO for 26 hrs, T_8- Tiles pressed in HAO for 34 hrs)

10. *Areca lutescens*

A perusal of data on different press drying techniques of areca palm leaves (Table-10) revealed that maximum moisture loss percent was noted in T_5 (63.39%), which is statistically far with T_6 (48.72%). Utmost sensory score for colour was noted in T_3 (7.60), whereas least found in T_2 and T_5 (4.60). Peak

score for texture was recorded in T_3 (7.60), which is significantly far with T_6 (4.20). Principal score for brittleness was noted in T_6 (7.60), which is statistically far with T_5 (4.80). Uppermost score for appearance was recorded in T_3 (7.40), whereas lower most found in T_2 and T_8 (5.80).

Table 10: Effect of press drying on areca palm (*Areca lutescens*) leaves

Treatments	FW (g)	DW (g)	ML (%)	Colour	Texture	Brittleness	Appearance
T_1	1.58	0.62	60.71	6.60	6.60	6.20	6.80
T_2	2.26	0.84	62.94	4.60	5.60	6.40	5.80
T_3	1.35	0.61	55.05	7.60	7.60	7.40	7.40
T_4	1.79	0.73	59.38	6.60	7.00	6.40	7.00
T_5	1.55	0.57	63.39	4.60	5.60	4.80	6.00
T_6	1.89	0.97	48.72	6.40	4.20	7.60	7.20
T_7	1.45	0.66	54.37	7.20	6.60	7.20	7.00
T_8	1.49	0.60	59.65	5.80	7.40	5.60	5.80
S.Em (±)	0.02	0.01	0.57	0.06	0.07	0.06	0.06
CD at 5%	0.05	0.02	1.66	0.18	0.20	0.18	0.19

(T_1- Wooden pressed, T_2- Iron pressed, T_3- Tiles pressed in MO for 2 min, T_4- Tiles pressed in MO for 3 min, T_5- Tiles pressed in MO for 4 min, T_6- Tiles pressed in HAO for 12 hrs, T_7- Tiles pressed in HAO for 20 hrs, T_8- Tiles pressed in HAO for 28 hrs)

The fresh weight of samples found insignificant due to homogeneous collection of material for press drying. In few crops, it might have varied due to varying selection of plant samples. These results are in accordance with Yadlod *et al*., (2016) [12]. Dry weight of flowers was significantly influenced by different drying treatments. These results are in accordance with Renuka *et al.*, (2016) [8]. Mainly heat energy is added in the course of press drying through various techniques in order to shorten the pressing time. Among them, wooden press recorded maximum moisture loss percent in mahogany tree (52.33%) and pygmy date palm (46.70%) foliage. Still now, wooden press is most popular and familiar method of preserving the plant samples. In this method due to pressure of wooden press, blotting sheets might have observed moisture from the plant samples and get dried. Here it's not possible to maintain the shape of flowers, very slow and time taking process. It takes few days to weeks depending upon the plant samples to get dry. Tiles pressed sample in microwave oven drier recorded maximum moisture loss percent in foliages of mussaenda (74.20%), rose (55.87%), earpod wattle (58.68%) and areca palm (63.39%). Several kinds of flower presses are available. Electronically produced microwaves might have liberated moisture from the plant samples by agitating the water molecule. The advantage of this method is we can get finished product in minutes and colour is more vibrant than the traditional pressing. Tiles pressed sample in hot air oven drier recorded maximum moisture loss percent in foliages of kadamba tree (66.31%), hibiscus (78.22%), pride of India (66.04%) and marigold (83.66%). Electrically produced hot air might have removed the moisture from plant samples and get dried. It will take hours to few days to get dried depending upon the plant samples. These results are in confirmation with findings of Singh and Dhaduk (2005) [11], Singh *et al.*, (2017) [10] in local weed flora of south Gujarat and Imtiyaz *et al*., (2012) [2] in some genera of Kashmir valley.

The qualitative characteristics i.e. colour, texture, brittleness and appearance of the dried flowers were influenced significantly by different drying treatments. Colour plays important role in dehydration to obtain good aesthetic quality of dried flower products (Sharma *et al.*, 2007) [9]. Up to certain duration of drying the texture score found increasing after that decreasing trend was observed and surface texture turned to rough importantly at longer duration of drying. Prolonged drying duration recorded maximum brittleness scores in dried flowers, which could be attributed to excessive loss in moisture (Kumari *et al.*, 2017) [4]. The final moisture content in the flowers and foliages after dehydration influences quality as appearance (Mishra *et al.*, 2014) [5].

Before drying After drying

Plate 1: Iron press dried rose (*Rosa spp.)* leaves

Plate 2: Microwave oven press dried hibiscus (*Hibiscus rosa-sinensis*) leaves

Plate 3: Iron press dried mahogany tree (*Swietenia mahagoni*) leaves

Before drying **After drying**

Plate 4: Microwave oven press dried earpod wattle tree (*Acacia auriculiformis*) leaves

Plate 5: Iron press dried pride of India tree (*Lagerstroemia speciosa*) leaves

Plate 6: Iron press dried pygmy date palm (*Phoenix roebeleni*) leaves

Plate 7: Microwave oven press dried marigold (*Tagetes spp.*) leaves

Before drying After drying

Plate 8: Microwave oven press dried areca palm (*Areca lutescens*) leaves

Plate 9: Microwave oven Press dried mussaenda (*Mussaenda erythrophylla*) leaves

Plate 10: Microwave oven press dried kadamba tree (*Anthocephalus cadamba)* leaves

Conclusion

From the results of above experiment, it can be concluded that iron press found suitable technique for press drying mahogany tree, lagerstroemia tree and rose leaves. Tiles pressed in MO for 1 min found most suitable technique for kadamba tree leaves, 2 min found ideal for mussaenda leaves, 3 min found best suitable technique for hibiscus and areca palm leaves, 4 min found ideal for marigold leaves. Both iron pressed and tiles pressed in MO for 3 min found suitable for earpod wattle tree leaves and 4 min found appropriate for pygmy date palm leaves.

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