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Standardization of drying technology for cut foliage

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Abstract
Dried flowers and foliage are an important product of modern floriculture. The study was carried out for Standardization of drying technology for cut foliage. The experiment was carried out in Completely Randomized Design and was replicated thrice. Present study describes plant species suitable for leaf skeletonization and the use of various chemicals for removal of unwanted color from prepared venation skeletons. Bleaching (Ala 25%) found better was transformed complete transparent and whitish for its further use in crafting. To ensure the availability of the greens for a longer duration a study was conducted on effect of glycerine solutions to enhance the shelf life, quality and extend the longevity of foliages. The experiment was conducted with three types of glycerine solutions (10%, 20% and 40%) and with two methods likely full-dip and uptake, by placing only the stems or dipping the foliages in the glycerine solution, which were harvested at matured stage. The parameters like fresh weight, dry weight and moisture loss. Other quality parameters like texture, shape, brittleness, colour retention and overall acceptability were recorded. Findings of results revealed that best results were obtain in terms of texture, shape, brittleness, colour, overall acceptability was maximum in glycerine (40%) by full-dip method for Kachnar leaves. In Peepal leaves and Thuja leaves, glycerine (40%) by full-dip method showed best results with maximum retention of colour.

Keywords: Brittleness, bleaching, leaf skeletons, colour, drying, glycerine, foliage

Introduction
Floriculture is a rapidly growing industry around the world and comprise of cut flowers, foliage, fresh, flower bud, dried, dyed, bleached and other parts of trees, shrubs, grasses which is used to create value-added items. Drying and preserving foliage and flowers is a form of artistic way of expressing since ancient times (Lourdusamy *et al*., 2001) [8]. The beauty and value of the dried flowers and foliage are that these can be kept and cherished for a longer period and therefore known as everlastings. Dry flowers have good demand both in domestic and international markets.

Skeleton leaf preparation is an art which can be used for beautification and for interior decorations. Skeleton leaves are semi-transparent leaves. Skeleton leaves prepared from fermentation need to be bleached, as the yellowing or some other kind of discoloration is the main problem in them to overcome with this skeletonised leaves can be processed for bleaching to remove their discoloration (M.M. Jana 2015) [9].

Glycerine drying is the most suitable method for drying of foliage as it gives the material more flexibility with low brittleness and good overall acceptance. Preserving plant material with glycol is called glycerolization. Leaves preserved through glycerine are less prone to shattering and mechanical damage and more natural in appearance. The present study was carried out seeing the importance of cut foliage in preparing various dry flower products such as dry flower arrangements, bouquets etc.

With following objectives:-

Objective I: To standardize the different chemicals for bleaching of prepared leaf skeletons.

Objective II: To standardize the glycerolization for drying of identified foliage.

Material and Methods
The research was executed at Dry flower laboratory, Department of Floriculture and Landscape Architecture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh inception during 2021-22. Fresh matured plant materials, such as foliage, were collected on the university campus in the early morning hours, free of bruises, pests and illness, immediately after dewdrops evaporated from the plant surface. In a Completely Randomized Design, the experiment was carried out three times with thirteen different treatments. Electronic balance was used to record changes in fresh weight and dry weight.

Other quality parameters like texture, shape, brittleness and over-all acceptance were assessed by means of sensory evaluation by scoring on a ten-point scale (Ranganna 1997) [10]. The studies were carried on fine and undamaged skeletons of suitable foliages. In present study commercial grades of Hydrogen peroxide and Ala the commercial bleach whitener has been used, the prepared concentrations were control 5, 20, 25 per cent. The experiment was carried out by placing only the stems or dipping the foliages in three types of glycerine solutions (10%, 20%, 40%), for evaluation of keeping quality in normal room temperature and the observations were recorded after drying, that soaking the extra solution from the fronds in bloating paper and stored at a dry place. The following observations were made during the experiment: fresh weight of sample (g), dry weight of sample (g), moisture content loss (percentage) and samples were given subjective scores on a 10-point scale with regard to quality parameters such as colour, texture, shape, brittleness and overall acceptability. Royal Horticultural Colour Chart was used to note change in colour of foliage during the experiment. Ranks were assigned based on the cumulative score and the optimal treatment combinations were determined (Raj and Gupta, 2005) [11].

Results and Discussion

Objective I: To standardize the different chemicals for bleaching of prepared leaf skeletons

Bauhinia purpurea

Ala (T_7 25% for 120 minutes) as an bleaching agent recorded (9.43) high scoring of Full White, which was statistically far with T_6 (9.20). Colour score observed maximum in T_7 (8.93), which was statistically far with T_6 (8.61). Best score for texture recorded in T_7 (8.77), which was statistically far with T_6 (8.69). Highest score for brittleness found in T_1 (7.07). Between drying durations, chief source for appearance was recorded in (T_7) (8.58), which was statistically far with T_6 (8.57). Sensory attributes like Yellowing, scored highest in T_8 (4.90), (Unbleached) in T_1 (9.96), Blackening in T_1 (4.30).

Ficus religiosa

The maximum Full white was recorded in T_7 (9.52), which was statistically far with T_6 (9.53). Colour score recorded extremely high in T_7 (8.83), which was statistically far with T_6 (8.26). Greatest score for texture recorded in T_7 (9.15), which was statistically far with T_6 (9.12). Peak score for brittleness found in T_1 (8.08). Topmost score for appearance was recorded in T_7 (8.73), which was statistically far with T_6 (8.56). Throughout drying durations, Sensory attributes like Yellowing scored highest in T_8 (5.12) and lowest in T_1 (0.20). Unbleached score recorded highest in T_1 (9.97).

Psidium guajava

Ala T_7 (9.43) recorded maximum full white, which was statistically far with T_6 (9.32) followed by T_{12} (8.88) T_{13} (8.93). Colour score recorded highest in T_7 (9.01), which was statistically far with T_6 (8.97). Ala 25% (T_7) noted the highest quality parameters scores for texture (8.56), which was statistically far with T_6 (8.49) and appearance (8.94), which was statistically far with T_6 (8.79). Uppermost score for brittleness found in T_1 (6.57). Among drying durations, sensory attributes like yellowing recorded highest in T_8 (4.59). Unbleached score noted highest in T_1 (9.97). Blackening score recorded maximum in T_1 (3.23).

Plumeria rubra

Ala T_7 as an bleaching agent recorded (9.65) high scoring of Full White, which was statistically far with T_6 (9.56). Colour score observed maximum in T_7 (8.95), which was statistically far with T_6 (8.82). Best score for texture recorded in T_7 (8.95), which was significantly far with T_6 (8.75). Highest score for brittleness found in T_1 (8.01). Between drying durations chief source for appearance was recorded in T_7 (8.80), which was statistically far with T_6 (8.63). Sensory attributes like Yellowing, scored highest in T_8 (5.12), Blackening T_1 (9.99), Blackening T_1 (4.43).

Alstonia scholaris

Full white was recorded in T_7 (9.45), which was statistically far with T_6 (9.43), followed by T_{12} (8.78), T_{13} (8.95). Colour score recorded extremely high in T_7 (8.98), which was statistically far with T_6 (8.93). Greatest score for texture recorded in T_7 (8.54), which was statistically far with T_6 (8.45). Peak score for brittleness found in T_1 (6.55). Topmost score for appearance was recorded in T_7 (8.99), which was statistically far with T_6 (8.89). Throughout drying durations, Sensory attributes like Yellowing scored highest in T_8 (4.60). Unbleached score recorded highest in T_1 (9.92). Blackening score recorded highest in T_1 (3.35).

Table 1: Effect of bleaching agent on prepared leaf skeletons of *Bauhinia purpurea*

Treatments	Fresh wt (g)	Dry wt (g)	Time taken for drying days	Full white	Yellowing	Unbleached	Blackening	Texture	Colour	Brittleness	Appearance
T1	0.59	0.16	1.16	1.42	0.21	9.96	4.30	1.16	1.46	7.07	0.87
T2	0.63	0.24	2.65	5.04	4.78	2.99	0.24	4.65	4.51	5.01	5.12
T3	0.70	0.31	3.12	7.95	3.83	1.53	0.03	6.77	6.32	3.13	6.95
T4	0.70	0.33	3.33	8.03	3.67	1.44	0.03	6.89	6.56	3.00	7.04
T5	0.65	0.28	2.88	6.54	4.39	1.99	0.13	5.64	5.02	4.57	6.32
T6	0.72	0.43	4.63	9.20	1.97	0.05	0.00	8.69	8.61	1.19	8.58
T7	0.73	0.46	4.70	9.43	1.34	0.01	0.00	8.77	8.93	1.07	8.57
T8	0.62	0.21	2.60	4.56	4.90	3.26	0.29	4.26	4.00	5.79	4.60
T9	0.66	0.29	2.92	6.98	4.12	1.98	0.09	6.42	5.42	3.71	6.75
T10	0.67	0.30	3.01	7.66	3.94	1.67	0.07	6.59	5.57	3.57	6.88
T11	0.64	0.25	2.78	5.47	4.55	2.67	0.19	5.38	4.73	4.80	5.44
T12	0.71	0.39	4.03	8.22	3.59	1.25	0.02	7.57	7.00	2.47	7.55
T13	0.71	0.41	4.10	8.33	2.88	0.97	0.02	7.77	7.64	2.27	7.64
S.Em (±)	0.04	0.01	0.14	0.33	0.17	0.11	0.02	0.31	0.32	0.11	0.30
CD at 5%	0.10	0.04	0.42	0.97	0.49	0.32	0.06	0.89	0.92	0.32	0.88

Table 2: Effect of bleaching agent on prepared leaf skeletons of *Ficus religiosa*

Treatments	Fresh wt	Dry wt	Time taken for drying days	Full white	Yellowing	Unbleached	Blackening	Texture	Colour	Brittleness	Appearance
T1	0.42	0.12	1.15	1.42	0.20	9.97	4.30	1.16	1.42	8.08	0.86
T2	0.40	0.20	2.61	5.04	4.78	2.99	0.24	4.65	4.51	5.01	5.12
T3	0.44	0.27	4.10	7.73	3.83	1.53	0.03	6.77	6.64	2.95	6.95
T4	0.45	0.28	4.21	7.97	3.67	1.44	0.03	6.89	6.76	2.69	7.26
T5	0.41	0.22	2.88	6.54	4.39	1.99	0.13	5.97	5.21	4.57	6.32
T6	0.48	0.33	4.63	9.35	1.88	0.04	0.00	9.12	8.26	1.16	8.56
T7	0.49	0.34	4.73	9.52	1.37	0.02	0.00	9.15	8.83	1.02	8.73
T8	0.39	0.19	2.60	4.56	5.12	3.26	0.29	4.26	4.23	5.79	4.60
T9	0.42	0.24	2.92	7.37	4.51	1.98	0.09	6.63	5.75	3.71	6.75
T10	0.43	0.26	3.10	7.66	3.94	1.67	0.07	6.67	6.47	3.57	6.88
T11	0.40	0.21	2.78	5.47	4.55	2.63	0.19	5.38	4.97	4.80	5.44
T12	0.46	0.29	4.28	8.30	3.58	1.23	0.04	7.74	7.00	2.47	7.66
T13	0.47	0.30	4.44	8.33	2.66	0.98	0.04	7.98	7.64	2.34	7.85
S.Em (±)	0.02	0.01	0.13	0.28	0.14	0.11	0.02	0.23	0.23	0.11	0.26
CD at 5%	0.07	0.03	0.36	0.81	0.40	0.31	0.05	0.66	0.66	0.33	0.74

Table 3: Effect of bleaching agent on prepared leaf skeletons of *Psidium guajava*

Treatments	Fresh wt	Dry wt	Time taken for drying days	Full white	Yellowing	Unbleached	Blackening	Texture	Colour	Brittleness	Appearance
T1	0.59	0.21	2.11	1.23	0.19	9.97	3.23	0.87	1.23	6.57	0.97
T2	0.61	0.30	3.09	6.19	4.43	2.25	0.21	5.65	6.23	3.44	6.22
T3	0.65	0.33	3.76	8.12	3.24	1.69	0.04	6.48	7.43	1.38	6.99
T4	0.66	0.34	3.78	8.34	3.17	1.54	0.03	6.56	7.87	1.24	7.17
T5	0.63	0.31	3.18	6.95	3.87	1.82	0.14	6.17	6.45	2.44	6.31
T6	0.67	0.44	4.70	9.32	1.64	0.02	0.00	8.49	8.97	0.84	8.79
T7	0.68	0.45	4.78	9.43	1.54	0.03	0.00	8.56	9.01	0.79	8.94
T8	0.60	0.29	3.02	5.57	4.59	2.54	0.25	5.34	5.78	3.66	4.60
T9	0.64	0.32	3.22	7.45	3.59	1.78	0.09	6.29	7.11	1.74	6.43
T10	0.64	0.33	3.64	7.80	3.38	1.73	0.06	6.34	7.25	1.60	6.65
T11	0.62	0.30	3.15	6.47	3.94	1.94	0.18	5.98	6.34	2.88	6.12
T12	0.67	0.39	4.15	8.88	2.84	1.23	0.02	7.33	8.21	1.03	7.54
T13	0.67	0.39	4.21	8.93	2.79	0.89	0.01	7.54	8.34	0.94	7.65
S.Em (±)	0.02	0.02	0.16	0.21	0.09	0.08	0.01	0.16	0.21	0.08	0.18
CD at 5%	0.07	0.05	0.48	0.62	0.26	0.23	0.04	0.48	0.60	0.24	0.53

Table 4 Effect of bleaching agent on prepared leaf skeletons of *Plumeria rubra*

Treatments	Fresh wt	Dry wt	Time taken for drying days	Full white	Yellowing	Unbleached	Blackening	Texture	Colour	Brittleness	Appearance
T1	0.85	0.44	3.35	1.41	0.25	9.99	4.43	0.98	1.02	8.01	0.79
T2	0.86	0.47	4.76	5.04	4.78	2.99	0.24	4.98	4.99	4.68	5.12
T3	0.87	0.52	5.23	7.93	3.88	1.51	0.05	6.44	6.17	2.95	6.95
T4	0.91	0.53	5.30	8.04	3.66	1.49	0.05	6.54	6.32	2.79	7.30
T5	0.90	0.49	5.05	6.54	4.39	1.99	0.13	5.22	5.38	4.00	6.32
T6	0.91	0.58	5.63	9.56	1.88	0.04	0.00	8.75	8.82	1.06	8.63
T7	0.91	0.59	5.83	9.65	1.34	0.03	0.00	8.95	8.94	0.99	8.80
T8	0.89	0.46	4.60	4.56	5.12	3.26	0.29	4.56	4.77	5.02	4.60
T9	0.90	0.50	5.09	7.37	4.51	2.01	0.09	6.10	5.67	3.77	6.83
T10	0.88	0.50	5.18	7.62	4.00	1.73	0.07	6.20	5.97	3.34	6.89
T11	0.86	0.48	4.78	5.47	4.55	2.63	0.19	5.18	5.24	4.35	5.44
T12	0.90	0.55	5.41	8.29	3.51	1.24	0.03	7.32	7.25	2.01	7.78
T13	0.90	0.55	5.54	8.31	2.56	0.99	0.03	7.48	7.91	1.90	7.89
S.Em (±)	0.03	0.02	0.15	0.25	0.12	0.09	0.02	0.22	0.21	0.11	0.25
CD at 5%	0.07	0.05	0.44	0.74	0.36	0.27	0.06	0.65	0.62	0.32	0.73

Table 5: Effect of bleaching agent on prepared leaf skeletons of *Alstonia scholaris*

Treatments	Fresh wt	Dry wt	Time taken for drying days	Full white	Yellowing	Unbleached	Blackening	Texture	Colour	Brittleness	Appearance
T1	0.51	0.11	2.00	1.25	0.11	9.92	3.25	0.85	1.70	6.55	0.95
T2	0.51	0.18	3.08	6.20	4.45	2.23	0.20	5.78	6.25	3.21	6.20
T3	0.55	0.24	3.78	8.15	3.25	1.70	0.04	6.47	7.45	1.31	6.98
T4	0.56	0.25	3.89	8.33	3.15	1.50	0.03	6.57	7.85	1.25	7.18
T5	0.52	0.20	3.33	6.98	3.90	1.83	0.15	6.22	6.47	2.41	6.35
T6	0.54	0.32	4.42	9.34	1.63	0.03	0.00	8.45	8.93	0.75	8.89
T7	0.55	0.37	4.58	9.45	1.55	0.04	0.00	8.54	8.98	0.69	8.99
T8	0.50	0.17	3.01	5.60	4.60	2.56	0.24	5.45	5.85	3.65	4.78
T9	0.53	0.21	3.24	7.45	3.60	1.77	0.08	6.30	7.24	1.75	6.45
T10	0.54	0.22	3.56	7.85	3.35	1.75	0.05	6.35	7.35	1.58	6.67
T11	0.51	0.19	3.28	6.48	3.95	1.95	0.17	5.99	6.35	2.85	6.22
T12	0.54	0.26	4.21	8.87	2.85	1.25	0.02	7.35	8.25	1.01	7.64
T13	0.56	0.27	4.23	8.95	2.80	0.90	0.01	7.55	8.35	0.20	7.76
S.Em (±)	0.02	0.01	0.10	0.23	0.09	0.08	0.01	0.16	0.20	0.07	0.20
CD at 5%	0.05	0.02	0.29	0.66	0.26	0.23	0.04	0.48	0.59	0.21	0.59

Figure showing before and after drying of bleached skeleton leaves

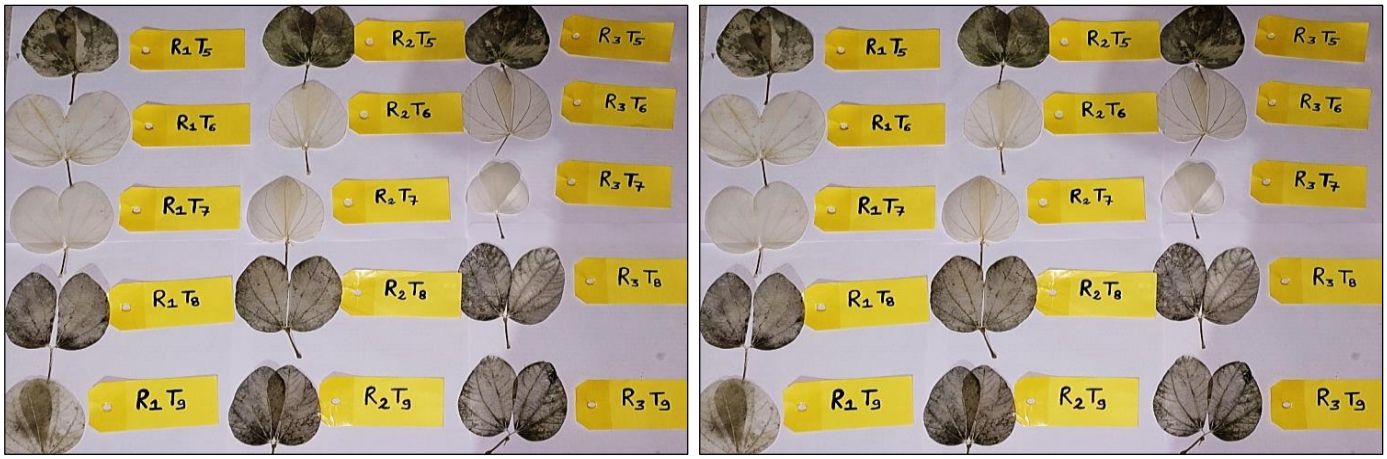

Fig 1: Effect of bleaching agent on *Bauhinia purpurea*

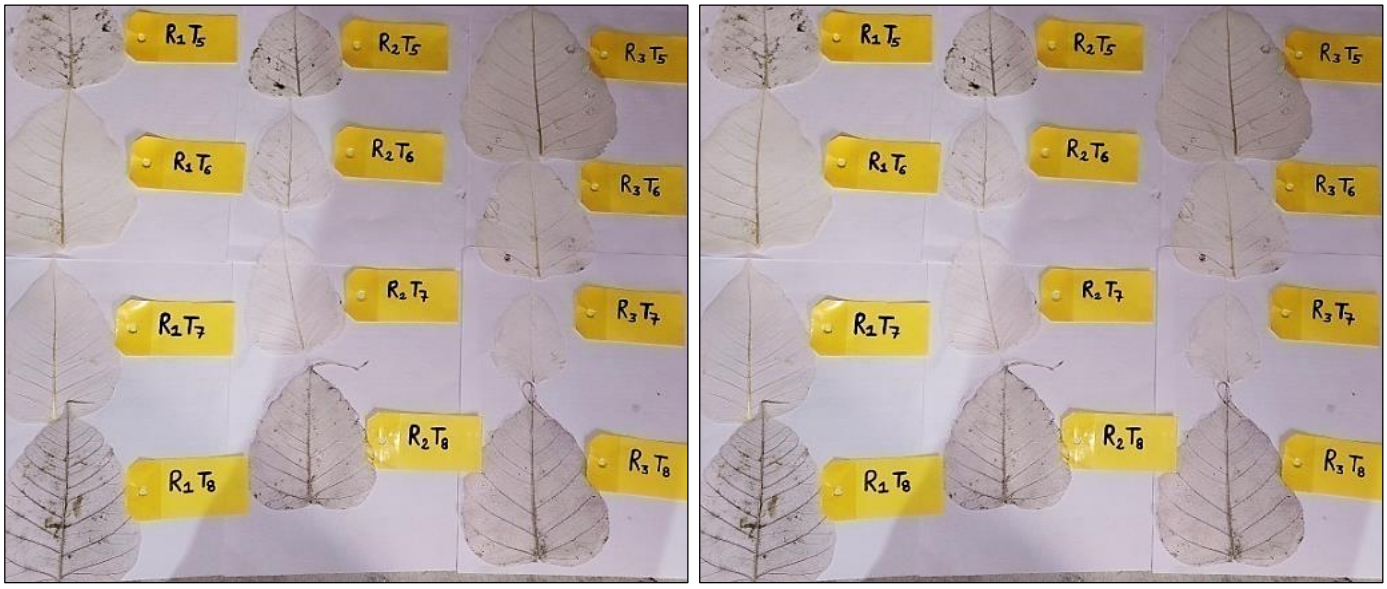

Fig 2: Effect of bleaching agent on *Ficus religiosa*

Objective II: To standardize the glycerolization for drying of identified foliage

Bauhinia purpurea

The data represented in the Table-1 revealed that that the topmost moisture loss percentage was recorded in T_1 (51.01%). Colour retention observed maximum in T_7 (8.54), which was statistically far with T_6 (7.19). Supreme score for texture recorded in T_7 (8.76). Top score for brittleness found in T_1 (6.78). Highest score for retention of shape was recorded in T_7 (8.21), which was statistically far with T_4 (8.17). Among drying durations, highest score for overall acceptability recorded in T_7 (8.76), which was statistically far with T_4 (8.56).

Ficus religiosa

The data represented in the Table-2 revealed that the topmost moisture loss percentage was recorded in T_1 (85.46%). Colour retention observed maximum in T_7 (8.54), which was statistically far with T_4 (8.21). Supreme score for texture recorded in T_7 (8.25), which was statistically far with T_6 (7.89). Top score for brittleness found in T_1 (7.20). Highest score for retention of shape was recorded in T_7 (8.10), which was statistically far with T_4 (7.96). Throughout drying durations, highest score for overall acceptability recorded in T_7 (8.82), which was statistically far with T_4 (8.62).

Thuja occidentalis

The data represented in the table 3 revealed that the topmost moisture loss percentage was recorded in T_1 (60.01%). Colour retention observed maximum in T_7 (8.56), which was statistically far with T_4 (8.31). Supreme score for texture recorded in T_7 (8.35), which was statistically far with T_4 (8.06). Top score for brittleness found in T_1 (7.84). Highest score for retention of shape was recorded in T_7 (8.20), which was statistically far with T_4 (7.99). Between drying durations, highest score for overall acceptability recorded in T_7 (8.90), which was statistically far with T_4 (8.67).

Polyscias scutellaria

The data represented in the table revealed that the topmost moisture loss percentage was recorded in T_1 (65.92%). Colour retention observed maximum in T_7 (8.53), which was statistically far with T_4 (8.30). Supreme score for texture recorded in T_7 (8.50), which was statistically far with T_4 (8.10). Top score for brittleness found in T_1 (8.12). Highest score for retention of shape was recorded in T_7 (8.25), which was statistically far with T_4 (7.99). Throughout drying durations, highest score for overall acceptability recorded in

T_7 (8.91) which was statistically far with T_4 (8.76).

Araucaria columnaris

The data represented in the table revealed that the topmost moisture loss percentage was recorded in T_1 (74.49%). Colour retention observed maximum in T_7 (8.43). Supreme score for texture recorded in T_7 (8.33), which was statistically far with T_4 (8.16). Top score for brittleness found in T_1 (6.19). Highest score for retention of shape was recorded in T_7 (8.76), which was statistically far with T_4 (8.69). Throughout drying durations, highest score for overall acceptability recorded in T_7 (8.96).

Table 6: Effect of glycerine drying on *Bauhinia purpurea*

Treatments	Fresh wt (g)	Dry wt (g)	Moisture loss (%)	Time taken for drying days	Texture	Brittleness	Retention of shape	Colour retention	Overall acceptability
T1	0.71	0.35	51.01	2.33	1.94	6.78	1.44	2.10	1.94
T2	0.77	0.47	38.97	5.00	6.15	4.42	5.67	6.01	6.40
T3	0.82	0.52	36.77	5.95	7.32	3.89	7.10	7.01	7.57
T4	0.83	0.53	36.35	6.93	8.56	3.21	8.17	8.21	8.56
T5	0.79	0.49	38.23	5.17	6.37	4.33	5.86	6.19	6.62
T6	0.83	0.53	36.31	6.10	7.52	3.82	7.27	7.19	7.77
T7	0.84	0.54	36.16	7.65	8.76	3.19	8.21	8.54	8.76
T8	0.73	0.43	40.93	4.00	4.76	4.92	5.19	4.45	5.01
T9	0.75	0.45	39.86	4.55	5.11	4.71	4.10	5.11	5.36
T10	0.80	0.50	37.45	5.43	6.96	4.28	6.46	6.69	7.21
T11	0.74	0.44	41.04	4.40	4.89	4.83	4.56	5.02	5.14
T12	0.76	0.46	39.06	4.67	5.47	4.51	5.16	5.23	5.72
T13	0.81	0.51	36.90	5.77	7.12	4.21	6.75	6.85	7.37
S.Em (±)	0.04	0.02	1.03	0.25	0.30	0.12	0.29	0.32	0.30
CD at 5%	0.11	0.07	3.00	0.73	0.88	0.34	0.84	0.94	0.88

Table 7: Effect of glycerine drying on *Ficus religiosa*

Treatments	Fresh wt (g)	Dry wt (g)	Moisture loss (%)	Time taken for drying days	Texture	Brittleness	Retention of shape	Colour retention	Overall acceptability
T1	0.76	0.11	85.46	2.30	1.95	7.20	1.39	2.05	1.97
T2	0.70	0.31	55.71	5.14	6.13	4.30	5.67	6.01	6.47
T3	0.76	0.41	45.43	6.97	7.57	3.88	7.47	7.01	7.57
T4	0.82	0.43	47.30	7.32	8.10	2.99	7.96	8.21	8.62
T5	0.73	0.35	52.05	5.45	6.66	4.21	5.86	6.10	6.62
T6	0.81	0.42	48.18	7.00	7.89	3.76	7.15	7.16	7.77
T7	0.82	0.44	46.39	7.35	8.25	2.97	8.10	8.54	8.82
T8	0.69	0.20	71.02	3.99	4.56	4.68	5.19	4.45	5.01
T9	0.65	0.25	61.54	4.35	5.67	4.49	4.10	5.11	5.36
T10	0.75	0.37	50.67	5.97	6.98	4.15	6.46	6.63	7.21
T11	0.72	0.21	70.35	4.17	4.88	4.57	4.56	5.02	5.14
T12	0.83	0.29	64.98	4.99	5.78	4.37	5.16	5.23	5.72
T13	0.73	0.40	42.89	6.53	7.13	4.03	6.67	6.81	7.42
S.Em (±)	0.04	0.01	2.67	0.14	0.16	0.11	0.26	0.28	0.30
CD at 5%	0.12	0.02	7.77	0.41	0.48	0.33	0.75	0.82	0.86

Table 8: Effect of glycerine drying on *Thuja occidentalis*

Treatments	Fresh wt (g)	Dry wt (g)	Moisture loss (%)	Time taken for drying days	Texture	Brittleness	Retention of shape	Colour retention	Overall acceptability
T1	0.95	0.20	60.01	2.17	1.83	7.84	1.40	2.23	1.95
T2	0.95	0.66	40.01	5.14	6.13	5.49	5.25	5.99	6.45
T3	1.00	0.79	32.99	6.98	7.57	4.56	7.43	7.13	7.59
T4	1.03	0.95	28.34	7.32	8.06	3.24	7.99	8.31	8.67
T5	0.93	0.65	37.63	5.45	6.66	5.34	6.35	6.10	6.63
T6	1.00	0.85	32.75	7.13	7.82	3.43	7.53	7.56	7.78
T7	1.03	0.99	27.21	7.51	8.35	3.05	8.20	8.56	8.90
T8	0.94	0.25	53.21	3.99	4.56	6.13	4.11	4.47	4.99
T9	0.99	0.45	45.46	4.35	5.67	5.87	4.67	5.15	5.34
T10	0.99	0.69	40.40	5.97	6.98	5.12	6.45	6.67	7.20
T11	0.95	0.35	49.49	4.17	4.88	5.91	4.55	4.98	5.13
T12	0.99	0.50	43.44	4.99	5.78	5.88	5.15	5.55	5.70
T13	1.00	0.73	39.00	6.53	7.13	4.99	6.85	6.85	7.42
S.Em (±)	0.05	0.02	0.94	0.13	0.16	0.16	0.15	0.16	0.17
CD at 5%	0.14	0.05	2.72	0.39	0.47	0.46	0.44	0.46	0.49

Table 9: Effect of glycerine drying on *Polyscias scutellaria*

Treatments	Fresh wt (g)	Dry wt (g)	Moisture loss (%)	Time taken for drying days	Texture	Brittleness	Retention of shape	Colour retention	Overall acceptability
T1	0.71	0.24	65.92	2.09	1.87	8.12	1.45	2.20	1.90
T2	0.73	0.43	40.38	5.14	6.13	5.64	5.67	5.97	6.55
T3	0.79	0.50	37.07	6.98	7.50	3.85	4.48	7.12	7.76
T4	0.79	0.54	31.87	7.35	8.10	3.15	7.99	8.30	8.76
T5	0.76	0.44	42.52	5.45	6.66	5.49	6.32	6.00	6.73
T6	0.76	0.50	33.57	7.13	7.75	3.78	6.35	7.54	7.80
T7	0.80	0.55	31.75	7.52	8.50	2.97	8.25	8.53	8.91
T8	0.74	0.40	45.67	3.99	4.56	6.38	4.15	4.44	5.00
T9	0.74	0.41	44.34	4.35	5.67	6.11	4.79	4.99	5.38
T10	0.76	0.45	41.09	6.00	6.98	5.37	6.50	6.57	7.22
T11	0.72	0.40	44.09	4.17	4.88	6.19	4.58	4.88	5.23
T12	0.75	0.42	43.64	4.99	5.73	5.73	5.25	5.45	5.80
T13	0.77	0.46	40.43	6.66	7.17	5.26	6.90	6.78	7.42
S.Em (±)	0.02	0.01	2.15	0.12	0.15	0.14	0.15	0.16	0.17
CD at 5%	0.07	0.03	6.24	0.36	0.44	0.42	0.44	0.46	0.49

Table 10: Effect of glycerine drying on *Araucaria columnaris*

Treatments	Fresh wt (g)	Dry wt (g)	Moisture loss (%)	Time taken for drying days	Texture	Brittleness	Retention of shape	Colour retention	Overall acceptability
T1	0.69	0.18	74.49	1.89	2.23	6.19	2.57	0.98	1.96
T2	0.70	0.28	59.88	3.21	6.93	4.51	7.29	6.43	6.87
T3	0.73	0.36	50.68	3.93	7.61	3.51	8.19	7.75	7.37
T4	0.73	0.47	35.62	4.19	8.16	2.99	8.69	8.39	7.98
T5	0.71	0.29	59.15	3.25	7.15	4.33	7.48	6.53	7.04
T6	0.73	0.38	47.95	3.95	7.64	3.51	8.25	7.87	7.81
T7	0.74	0.48	35.14	4.20	8.33	2.95	8.76	8.43	8.96
T8	0.69	0.20	71.01	2.93	5.44	5.11	5.99	5.32	6.12
T9	0.70	0.25	64.29	3.10	6.54	4.79	6.53	6.02	6.35
T10	0.71	0.30	57.75	3.57	7.21	4.25	7.68	7.15	7.00
T11	0.69	0.22	67.92	2.99	5.78	4.89	6.43	5.51	6.15
T12	0.70	0.26	62.86	3.15	6.78	4.72	7.20	6.15	6.56
T13	0.72	0.31	56.94	3.78	7.32	3.99	7.34	7.25	7.21
S.Em (±)	0.02	0.01	0.47	0.09	0.17	0.12	0.18	0.17	0.17
CD at 5%	0.07	0.02	1.36	0.25	0.51	0.34	0.54	0.49	0.49

Figure showing Before drying and After drying of effect of glycerine drying on different foliages

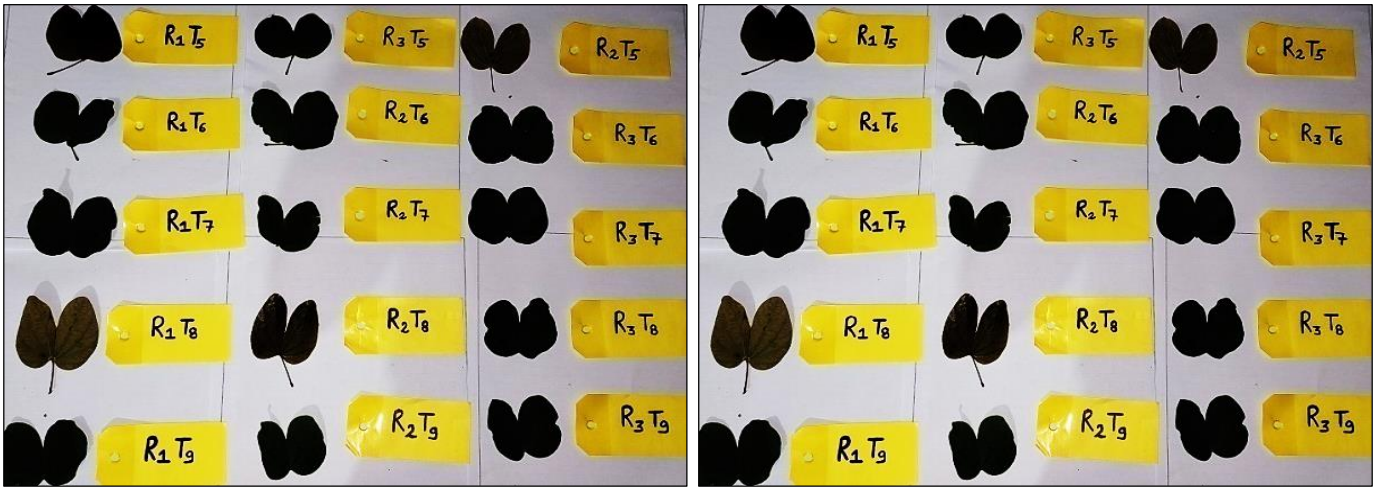

Fig 3: Effect of glycerine drying on *Bauhinia purpurea*

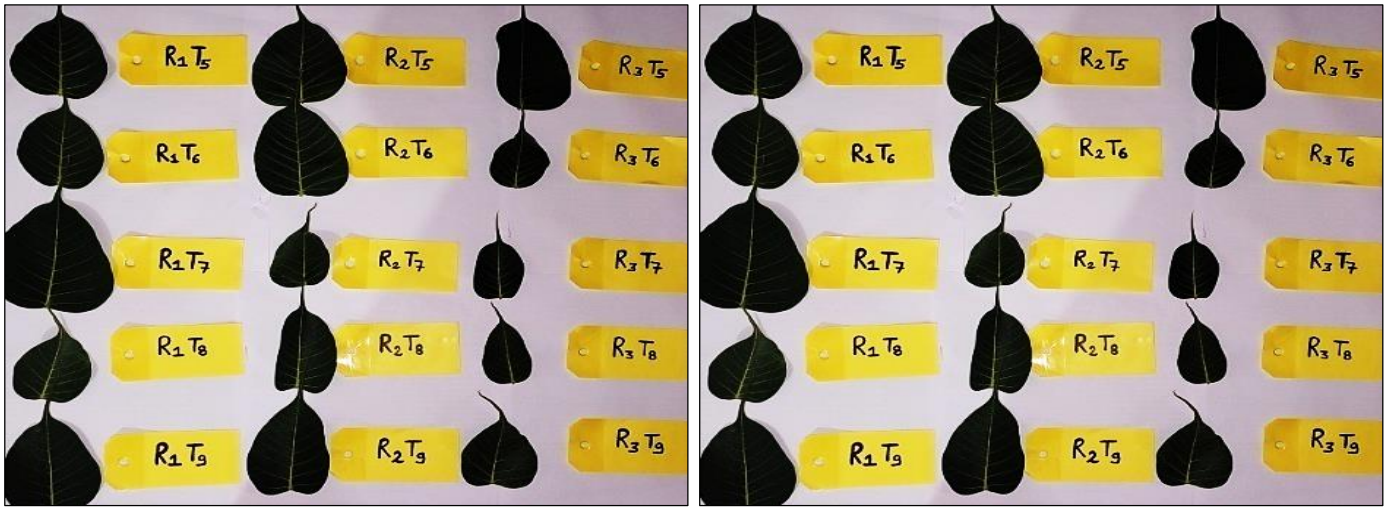

Fig 4: Effect of glycerine drying on *Ficus religiosa*

Conclusions

In the present study bleaching of venation skeletons was done which were earlier prepared by fermentation. The bleaching agents such as hydrogen peroxide and a fabric whitener called Ala were used. The overall result of bleaching obtained by Ala was found to be better at a concentration of 25% in *Ficus religiosa*, *Bauhinia purpurea*, *Plumeria rubra*, *Psidium guajava*, *Alstonia scholaris*, leaves. At these particular concentrations the selected material was transformed complete transparent and whitish for its further use in crafting of variety of artefacts.

Results of the experiment concluded that the ideal concentration of glycerine best suited for preservation varied from species to species and method of treatment. Best results were obtained in terms of texture, shape, brittleness, colour, over-all acceptability for Thuja (*Thuja occidentalis*), Christmas tree (*Araucaria columnaris*), Kachnar (*Bauhinia purpurea*), Aralia (*Polyscias scutellaria*) and Pipal (*Ficus religiosa*), glycerine-40% by full-dip method for 48 hours was most effective.

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