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Short Communication

Anthocyanins affecting differential spathe colour expression in diverse genotypes of *Anthurium andreanum* Linden

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Anthurium (*Anthurium andreanum* Linden.) the semi-terrestrial and perennial epiphytic plants with creeping arborescent stem is tropical plant of great beauty grown for its colourful long lasting flowers. Valuable part, the cordate blistered and glossy spathe is a modified leaf subtending the fleshy inflorescence bearing small sessile flowers. Spathe colour gives a sense of aesthetic pleasure to human beings. So there is a need for developing new and improved cultivars with different colour. The relative concentrations of anthocyanin and its influence on spathe colour in 50 morphologically diverse and taxonomically complex genotypes of anthurium showing variations in spathe colour, shape, size and other commercially valuable morphological characters were utilized for the study. The selected plants of the above 50 genotypes were raised in pot culture experiment in a completely randomised design with three replications. Spathes were harvested within two weeks of unfurling or when half of the spadix lengths had changed colour. Estimation of anthocyanin was done as per the method described by Rangana [1].

From the analysis, it was concluded that the mean total anthocyanin content ranged from 26.81 mg/g (pink spathe) to 710.79 mg/g (maroon spathe) (Table 1). Low anthocyanin content of 26.81 mg/g was exhibited by the genotype having pink coloured spathe (Fig. 1.(d),

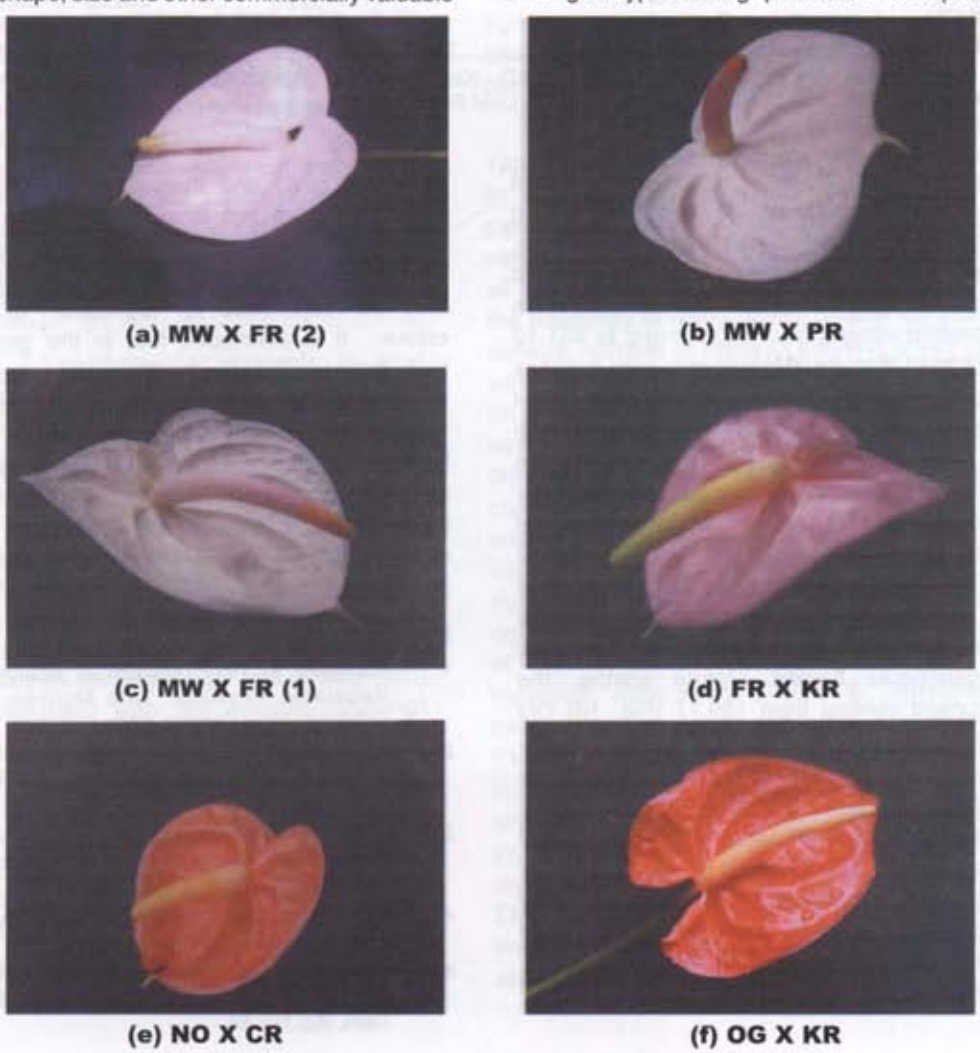

Fig. 1. Different spathe colour in *Anthurium andreanum*

Table 1. Anthocyanin concentrations of spathe colour in 50 genotypes of anthurium

Sl. No.	Genotypes	Anthocyanin content (mg/g)	Spathe colour	Sl. No.	Genotypes	Anthocyanin content (mg/g)	Spathe colour
1	MO × LR	221.21	Red	26	FR × DT (2)	149.01	Dark red
2	MO × KR (1)	162.25	Red	27	FR × KR	26.81	Pink
3	MO × KR (2)	167.58	Dark red	28	FR × LR	393.41	Dark red
4	KO × CR	201.63	Red	29	FR × MW (1)	311.95	Red
5	KO × LR	192.46	Red	30	FR × MW (2)	70.27	White
6	KO × DT	200.89	Bright red	31	MW × FR (1)	160.56	White with pink veins
7	KR × DT	153.08	Dark red	32	MW × FR (2)	33.94	White
8	KR × LR	190.42	Dark red	33	MW × PR	166.33	White
9	KR × CR	276.17	Deep maroon	34	MW × DT	228.44	Maroon
10	LR × DT	695.51	Deep maroon	35	TR × MW	179.22	Maroon
11	LR × PR	171.09	Maroon	36	LJ × MW	156.14	Dark red
12	LR × FR	234.55	Red	37	PR × KR	142.90	Bright red
13	NO × TR	214.87	Bright red	38	PR × MO	173.59	Bright red
14	NO × PR	190.77	Dark red	39	PR × DT	451.12	Dark red
15	NO × DT	240.73	Red	40	PR × OG	435.16	Bright red
16	NO × CR	163.95	Orange	41	PR × MW	149.44	Light orange
17	NO × LR (1)	225.05	Red	42	PR × LR (1)	376.10	Dark red
18	NO × LR (2)	292.56	Maroon	43	PR × LR (2)	245.42	Deep maroon
19	OG × KR	139.17	Dark orange	44	PR × LR (3)	710.79	Maroon
20	OG × LR	163.27	Orange	45	PR × FR (1)	267.82	Maroon
21	OG × DT	120.84	Dark red	46	PR × FR (2)	448.74	Bright red
22	HR × LW	411.82	Dark red	47	PR × FR (3)	232.85	Red
23	FR × CR (1)	222.65	Dark red	48	PR × FR (4)	268.50	Dark red
24	FR × CR (2)	225.05	Dark red	49	DT × KR	186.69	Red
25	FR × DT (1)	86.22	Dark red	50	DT × FR	214.53	Bright red

MO - Mauritius Orange, OG - Orange Glory, LJ - Lady Jane, KO - Kalympong Orange, HR-Honeymoon Red, PR - Pompon Red, KR - Kalympong Red, FR - Fla Red, DT - Dragon's Tongue Red, LR - Liver Red, MW - Merengue White, CR - Chilli Red, NO - Nitta Orange, TR - Tropical Red, LW - Lima White

FR × KR) while those of high anthocyanin content (710.79mg/g) was exhibited by the genotype having maroon spathe. The colour ranged from red, orange, pink, white and coral. Genotypes having varying red coloured spathe *viz.*, bright red, red and dark red have anthocyanin content varying from 86.22 mg/g to 451.12 mg/g. This indicated that these genotypes may possess both the pigments *viz.*, pelargonadin 3 rhamnosyl glucoside and cyanidin 3 rhamnosyl glucoside in high concentration [2]. For the genotype having deep maroon spathe, the anthocyanin content was 695.51mg/g. For white coloured spathe, the anthocyanin content ranged between 33.94mg/g [Fig. 1(a) MW × FR (2)] to 166.33mg/g [Fig. 1(b) MW × PR]. The results revealed that in white cultivars both of the pigments may be absent. These results are in conformity with Iwata *et al.*, [2]. In genotypes having orange spathe, the anthocyanin content ranged from 139.17 [Fig. 1(f) OG × KR] to 163.95 mg/g [Fig. 1(e) NO × CR]. MW × FR(1) with anthocyanin content 160.56 mg/g had White spathe with pink veins [Fig. 1(c) MW × FR(1)]. Obaki type genotypes *i.e.* double coloured spathe had anthocyanin content of 120.84 mg/g [3-4]. Two major genes M and O were responsible for the five major colours *i.e.*, red, orange, pink, coral and white. Red and pink coloured spathes have both M and O genes. The incremental effect of M appeared to be greater than that of O and therefore, the intensity of colour decreased from red to pink [5]. In the present study the different spathe colour *viz.*, red, orange, pink and white expression revealed that the genes M and O may be responsible for expression of varied spathe colour. It is concluded that in the genotypes having high anthocyanins, the spathe colour was maroon while in low anthocyanin content the spathe colour was pink. The spathes of red based colours are usually having high anthocyanin content which ultimately increases the aesthetic sense of humans. Hence, the genotypes having red based spathe colours, if exploited commercially will improve the export quality of cut flower anthurium.

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