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Proximate Composition and Bioactive Compounds in Diverse Eggplant Genotypes

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Authors' contributions

This work was carried out in collaboration among all authors. Author VB carried out the laboratory works and managed the literature searches. Author SA designed the study, interpreted the results and wrote the first draft of the manuscript. Author AD supervised the laboratory works and performed the statistical analyses. All authors read and approved the final manuscript.

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ABSTRACT

Eggplant (*Solanum melongena* L.) is an important solanaceous crop of tropics and sub-tropics, having high production potential, and also a rich source of nutrients, particularly, carbohydrates, proteins, dietary fibre and vitamins like thiamin, niacin, pantothenic acid and folic acid, minerals like calcium, iron, potash, zinc, copper and manganese as well as bioactive compounds. However, eggplant is available in diverse shape and colour and consumer preference varies and the nutrient composition is different. In this investigation, we worked out the proximate nutrient compounds (on dry weight basis) and the bioactive compounds (on a fresh weight basis) in twenty diverse eggplant genotypes varying in colour and shape. Moisture content in the fruits ranged from 71.54 to 91.36%, while carbohydrate content from 2.80 to 6.82%, crude protein 16.98 to 31.85%, nitrogen 2.49 to 4.35%, phosphorous 0.29 to 0.51%, potassium 1.65 to 4.54%, calcium 0.83 to 0.35%, iron 106.21 to 235.34 mg/kg, manganese 89.01 to 245.54 mg/kg, copper 18.73 to 98.56 mg/kg and zinc 60.73 to

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75.77 mg/kg, each on dry weight basis. Biochemical parameters like total soluble solids (TSS) ranged from 1.27 to 3.94 °Brix, total sugar content 2.26 to 4.65%, ascorbic acid 0.66 to 3.53 mg/100 g, total anthocyanin content 0.35 to 18.85 mg/100 g FW, total chlorophyll 0.11 to 2.70 mg/100 g FW, total phenol 1.03 to 15.65 mg catechol equivalent/100 g FW, total antioxidant 1.16 to 2.26 µmol Trolox equivalent/g FW and radical scavenging activity 50.52 to 96.48%. Proximate nutrients were highest in Pusa Uttam, Pant Rituraj and BRBL-01, quality parameters in BRBL-07 and 71-19, while bioactive compounds were highest in Pant Rituraj, Pusa Purple Long, Pusa Purple Cluster and BRBL-01. These genotypes may be utilized in future breeding programmes for developing effective and nutritive cultivars.

Keywords: Brinjal; nutrients; antioxidants; quality traits; composition.

ABBREVIATIONS

DW : Dry Weight Basis
FW : Fresh Weight Basis
TSS : Total Soluble Solids
TSC : Total Sugar Content
TA : Total Anthocyanin Content
AA : Ascorbic Acid
TC : Total Chlorophyll Content
TPC : Total Phenolic Content
TAN : Total Antioxidant
RSA : Radical Scavenging Activity
N : Nitrogen
P : Phosphorus
K : Potassium
Ca : Calcium
Fe : Iron
Mn : Manganese
Cu : Copper
Zn : Zinc

1. INTRODUCTION

Eggplant (*Solanum melongena* L.) or brinjal or aubergine is an important crop of tropics and sub-tropics of solanaceous family. It was widely cultivated in India as one of the most important vegetable crops. Eggplant is a warm-season crop; it was grown generally twice or thrice in a year and the fruit is available throughout the year. Its fruit has a very high nutritive and medicinal value [1]. In India, brinjal has been cultivated since the last 4000 years, the country is the primary centre of origin for brinjal, and there exists a wide range of variability in plant type, fruit size, shape, colour, yield, fruit quality, a cooking quality found in brinjal cultivars [2,3]. There are 3 main melongena species of botanical varieties [1]. The most common brinjal to which large, round or egg-shaped fruited forms belong, are grouped under var. *esculentum.* The long, slender types are included under var. *serpentine* and the dwarf brinjal var. *depressum*. Fruit colour varies from light to dark purple, almost black, green or white; fruit length varies between 4-45 cm and thickness 2-35 cm, in different shapes and weight ranging between 15-1500 g; the fruits are set as single or in clusters, up to 5 fruits; physiologically ripe fruits turn brown, red or yellow [4].

The whole fruit is edible but pericarp forms the bulk of the fruit and contains most of the nutritive ingredients. A good quality fruit of eggplant should have a thick pericarp, capacity to stay fresh throughout storage without developing brown colour or wrinkles and should retain firmness and good colour, etc. Much variation exists in the chemical constituents of the fruits of different cultivars and it has been observed that chlorophyll, true protein, and total phenols are influenced by other constituents of the fruits besides dry matter, especially anthocyanin and ortho-dihydroxy phenols [5]. These are linked to various health benefits [6,7]. In brinjal fruits iron catalytic activity is highest in green fruited cultivars and lowest in white fruited cultivars; copper content and polyphenol oxidase activity has been reported to be highest in purple colour fruit and lowest in white fruits, while white fruited cultivars contained twice as much crude fiber as the purple and green-fruited cultivars [8]. Eggplant fruits contain powerful antioxidants such as ascorbic acid and phenolics [9] and eggplant has been reported as one of the top ten vegetables serving as the best source of antioxidant [10] and hence may involve in nutritional security [11]. Eggplant extracts suppress the development of blood vessels required for tumour growth and metastasis [12]. It contains a red-blue flavonoid plant pigment called nasunin, a component of anthocyanin that improves blood flow to the brain and inhibits lipid peroxidation [13], besides having free radical scavenging and iron-chelating activities [14,15]. Eggplant fruits are effective for curing several

diseases, including cancer, high blood pressure and hepatitis due to the presence of anthocyanins [16,17].

In this investigation, proximate nutrient and bioactive compound composition of fruits of twenty eggplant genotypes of different shapes (round, long and oblong), size (big, moderate and small) and colour (purple, blackish-purple, green, white distributed uniformly or with patches and streaks) have been studied.

2. MATERIALS AND METHODS

The plant materials comprised of twenty diverse genotypes of eggplant varying in shape, size and colour growing in different parts of India. Table 1 provides the details of the genotypes used in the study. These twenty genotypes were planted in randomized block design with three replications in the Vegetable Research Farm of Department of Horticulture (Vegetable and Floriculture) at Bihar Agricultural University, Sabour during the autumn-winter season of 2016-'17. Five fruits from five randomly selected plants in each replication were collected at the edible maturity stage of eggplant. Composite samples were prepared from the fruits replication wise and analyses carried out. The nutrient and biochemical analyses were performed separately using from fruits harvested during the second harvest, fourth harvest and sixth harvest and their average values used for statistical analyses.

Table 1. Qualitative characters and source of the twenty brinjal genotypes under study

Genotypes	Fruit shape	Fruit colour	Fruit pedicel prickles	Seed colour	Seediness	Collected from
Pant Rituraj	Round	Dark Purple	No	Whitish Yellow	Medium	GBPUAT, Pant Nagar
Arka Kusumakar	Long	Green	No	Bright Yellow	Medium	IIHR, Bangalore
Pusa Purple Cluster	Oblong small cluster	Dark Purple	No	Light Yellow	Less	IARI , New Delhi
Pusa Purple Long	Long	Blackish Purple	No	Yellow	Medium	IARI, New Delhi
BRBL-10	Long	Green	No	Yellow	Medium	BAU, Sabour
Arka Shirish	Long	Green	No	Brownish Yellow	Less	IIHR, Bangalore
IIHR-562	Oblong	Purple	No	Brownish Yellow	Medium	IIHR, Bangalore
IIHR-563	Small long in cluster	Dark Purple	No	Brownish Yellow	Medium	IIHR, Bangalore
71-19	Long	Green	No	Brownish Yellow	Less	BAU, Sabour
BRBL-09	Oblong	White	No	Yellow	Medium	BAU, Sabour
VR-2	Round	White	No	Yellow	High	IIVR, Varanasi
Swarna Mani	Round	Blackish Purple	Few	Blackish Brown	Medium	BAU, Sabour
Uttara	Long	Purple	No	Yellow	Medium	IIVR, Varanasi
Pusa Uttam	Round	Dark Purple	No	Brownish Yellow	Medium	IARI , New Delhi
Rajendra Baigan -2	Long	Green	No	Yellow	Medium	BAU, Sabour
BRBL-02	Long	Dark Purple	No	Brownish Yellow	Medium	BAU, Sabour
BRBL-04	Oblong	Green with white streaks	No	Brownish Yellow	High	BAU, Sabour
BRBL-07	Oblong	Blackish Purple	Few	Brownish Yellow	Less	BAU, Sabour
BRBL-11	Long	Pink	No	Brownish Yellow	Less	BAU, Sabour
BRBL-01	Oblong	Green with white streaks	No	Brownish Yellow	Less	BAU, Sabour

Proximate nutrient composition of the fruits on dry weight basis was determined. Moisture, carbohydrate, crude protein, total nitrogen, phosphorus, potassium, calcium, iron, manganese, copper and zinc were determined as per Piper [18] and Motsara and Roy [19].

Moisture content was estimated by drying the sample in an oven and moisture content was calculated by the weight difference between fresh and dry sample as follows:

$$\text{Moisture \%} = \frac{(\text{Weight of fresh sample} - \text{Weight of dried sample})}{(\text{Weight of fresh sample})} \times 100$$

Total carbohydrate content was estimated by the phenol sulphuric acid method [20]. The crude protein and total nitrogen content were estimated as per Motsara and Roy [19].

Di-acid digestion (using a mixture of HNO_3 and $HClO_4$ in 9:4 ratio) were used for determination of most of the elements (P, K, Ca, Mg, S, Fe, Mn, Zn and Cu) and the analyses were carried out according to Motsara and Roy [19]. The readings were taken in an Atomic Absorption Spectrophotometer (AAS).

Biochemical profiling of the fruits comprising of the quality parameters and bioactive compounds was done using composite fresh fruit sample. Total soluble solid (TSS) per replication was estimated using an ERMA manual refractometer (0-32 ºBrix). Total sugar content of the pulp (Fehling's method) was analyzed by Lane-Eynon method [21] using Fehling solutions as a reagent and results were expressed in percent. The ascorbic acid content in the fresh fruits was determined by the volumetric method [22]. Total anthocyanin was estimated as per Ranganna [23]. Total chlorophyll was estimated using 80% acetone as extractant and noting the absorbance at 645 nm and 663 nm [24].

Total phenolics were estimated spectro-photometrically using Folin–Ciocalteu reagent [25] and noting the absorbance at 765nm and judging the observations against standard catechol solution.

The total antioxidant capacity was estimated as per the method of Apak [26] and depicted by cupric ion reducing antioxidant capacity (CUPRAC).

Radical scavenging activity was determined through DPPH (2, 2-diphenylpicrylhydrazyl) assay based on the measurement of the scavenging ability of antioxidants towards the stable radical DPPH [27].

Statistical differences between the data sets were estimated using two way ANOVA followed by Duncan's multiple range test using SPSS software (version 16.0 for Windows, USA).

3. RESULTS AND DISCUSSION

Proximate nutrients were estimated on dry weight basis and have been depicted in Table 2. Moisture content in the fruits ranged from 71.54 to 91.36% on dry weight basis (DW) in the genotypes under study. There are previous reports of 93% moisture content [28], while some researchers found that moisture percent in eggplant was 89.27 ± 0.12 g [29]. Highest moisture content was observed in Pusa Purple Cluster, a purple long variety, at par with Rajendra Baingan-2, a green long variety, while least was observed in VR-2, a white round genotype. Carbohydrate content ranged from 2.80 to 6.82%. Chinedu [29] reported 4.14 ± 0.11 g carbohydrates while Eze and Kano [30] reported higher amounts (13.03%). BRBL-10, a green long genotype contained the least carbohydrate while BRBL-01, the green oblong genotype contained the highest content. The round or oblong genotypes were found to possess higher amounts of carbohydrate than the long ones. Crude protein ranged from 16.98 to 31.85%, highest being in Pusa Uttam, while least in Uttara. 32.55% crude protein in eggplant on a dry weight basis was previously observed [31]. The purple genotypes mostly contained higher amounts of protein than the green or white ones except a few.

Nitrogen ranged from 2.49 to 4.35% which showed consonance with the findings of Dougnon et al. [32]. Pusa Purple Long contained the highest N content while Uttara contained the lowest quantity. Phosphorous ranged from 0.29 to 0.53%, Pusa Purple Long containing the highest amount, while VR-2 the lowest. Potassium ranged from 1.65 to 4.54%, highest in Arka Shirish, green long variety while least in purple oval genotype IIHR-563. Calcium ranged from 0.35% to 0.83%, being least in Pant Rituraj and highest in BRBL-01. Iron ranged from 106.21 to 235.34 mg/kg, highest in Arka Kusumakar, while lowest in BRBL-09. The range of manganese was noticed from 89.01 to 245.54 mg/kg, the lowest amount being found in Swarna Mani, while highest in Pusa Uttam, both purple

Table 2. Proximate nutrient components under study of 20 genotypes

Genotypes	Moisture (%)	Carbohyd-rate (%)	Crude protein (%)	N (%)	P (%)	K (%)	Ca (%)	Fe (mg/kg)	Mn (mg/kg)	Cu (mg/kg)	Zn (mg/kg)
Pant Rituraj	83.83^{efcd}	4.33^{gf}	27.45^{c}	4.23^{a}	0.47^{bac}	3.6^{efcd}	0.35^{d}	215.66^{cb}	241.78^{a}	63.59^{f}	70.83^{b}
Arka Kusumakar	84.55^{efcd}	4^{gh}	19.42^{ih}	3.45^{egf}	0.42^{ebdac}	2.76^{ih}	0.63^{bdac}	235.34^{a}	195.66^{f}	42.17^{ji}	66.83^{fecd}
Pusa Purple Cluster	91.36^{a}	5.2^{e}	20.15^{h}	3.35^{higf}	0.32^{ebdc}	3.75^{becd}	0.38^{d}	116.77^{o}	210.1^{e}	77.9^{c}	72.6^{ba}
Pusa Purple Long	84.65^{efcd}	6.28^{bac}	28.54^{cb}	4.29^{a}	0.53^{a}	2.8^{ih}	0.48^{bdc}	210.09^{d}	235.45^{b}	69.33^{e}	75.4^{a}
BRBL-10	78.54^{ijh}	2.8^{i}	28.85^{cb}	3.02^{ij}	0.33^{edc}	3.95^{bc}	0.58^{bdac}	150.85^{j}	158.87^{h}	91.63^{b}	75.17^{a}
Arka Shirish	82.36^{efg}	5.63^{ed}	20.08^{h}	3.33^{higf}	0.43^{bdac}	4.54^{a}	0.52^{bdac}	201.52^{f}	224.98^{c}	49.23^{h}	75.77^{a}
IIHR-562	80.26^{igh}	6.58^{ba}	30.64^{a}	2.84^{j}	0.3^{ed}	2.28^{kj}	0.68^{bdac}	125.54^{n}	98.54^{k}	98.56^{a}	65.17^{f}
IIHR-563	77.28^{ij}	6.43^{bac}	28.15^{cb}	3.38^{hgf}	0.34^{edc}	1.65^{l}	0.59^{bdac}	178.52^{h}	92.5^{l}	38.19^{k}	70.48^{bc}
71-19	87.82^{bc}	4.47^{gf}	24.27^{ef}	3.79^{edc}	0.31^{edc}	3.35^{feg}	0.75^{bac}	125.85^{n}	116.75^{j}	18.73^{m}	65.96^{fe}
BRBL-09	76.65^{j}	3.57^{h}	30.65^{a}	3.13^{higj}	0.35^{edc}	4.0^{bc}	0.45^{dc}	106.21^{p}	145.55^{i}	28.63^{l}	72.1^{ba}
VR-2	71.54^{k}	6.67^{ba}	18.3^{i}	3.08^{hij}	0.29^{e}	1.88^{kl}	0.58^{bdac}	142.73^{k}	186.54^{g}	36.7^{k}	69.4^{becd}
Swarna Mani	83.53^{efgd}	5.53^{ed}	22.55^{g}	4.35^{a}	0.39^{ebdc}	3.85^{bcd}	0.79^{bac}	133.17^{ml}	214.5^{d}	38.88^{k}	64.47^{f}
Uttara	81.5^{fgh}	4.6^{f}	16.98^{j}	2.49^{k}	0.40^{ebdac}	3.03^{igh}	0.64^{bdac}	162.34^{i}	89.01^{l}	41.00^{j}	69.43^{becd}
Pusa Uttam	86.18^{bcd}	3.67^{h}	31.85^{a}	4.31^{a}	0.44^{bac}	4.23^{ba}	0.57^{bdac}	211.71^{cd}	245.54^{a}	69.24^{e}	75.5^{a}
Rajendra Baigan -2	89.11^{ba}	6.5^{ba}	23.54^{gf}	4.15^{ba}	0.39^{ebdc}	3.44^{fegd}	0.59^{bdac}	205.93^{e}	216.2^{d}	28.30^{l}	69.53^{becd}
BRBL-02	81.75^{efgh}	5.5^{ed}	25.55^{ed}	3.52^{edf}	0.43^{bdac}	2.6^{ij}	0.47^{bdc}	129.62^{mn}	224.0^{c}	59.5^{g}	60.73^{f}
BRBL-04	85.02^{ecd}	4.67^{f}	20.34^{h}	3.13^{higj}	0.41^{ebdac}	3.57^{fecd}	0.71^{bac}	191.43^{g}	146.17^{i}	44.22^{i}	64.23^{f}
BRBL-07	86.39^{bcd}	6.27^{bc}	25.8^{d}	4.05^{bac}	0.36^{ebdc}	3.19^{fgh}	0.81^{ba}	135.84^{l}	234.17^{b}	67.33^{e}	69.2^{becd}
BRBL-11	85.84^{bcd}	5.97^{dc}	29.16^{b}	3.45^{egf}	0.45^{bac}	2.84^{ih}	0.52^{bdac}	117.24^{o}	214.43^{d}	75.4^{d}	66.46^{fed}
BRBL-01	87.75^{bc}	6.82^{a}	28.44^{cb}	3.84^{bdc}	0.49^{ba}	4.13^{ba}	0.83^{a}	216.9^{b}	236.13^{b}	90.73^{b}	70.11^{bcd}
Overall Mean	83.30	5.27	25.04	3.56	0.40	3.27	0.61	165.67	186.34	59.69	69.45
C.V (%)	4.09	3.60	3.09	4.98	2.73	3.09	4.90	3.54	3.03	3.84	5.82
S.E.	1.05	0.17	0.45	0.11	0.04	0.15	0.10	1.42	1.37	0.74	1.18
C.D. 5%	3.68	0.47	1.29	0.32	0.11	0.42	0.28	4.04	3.91	2.12	3.37

Table 3. Biochemical characters under study of 20 genotypes

Genotypes	Biochemical characters							
	TSS	TSC	AA	TA	TC	TPC	TAN	RSA
Pant Rituraj	2.66^{bcd}	3.76^{c}	3.1^{c}	18.85^{a}	0.46^{fghi}	13.55^{b}	2.26^{a}	94.89^{a}
Arka Kusumakar	2.47^{bcde}	3.96c^{b}	1.93^{e}	0.35^{jk}	0.75^{ef}	7.76^{c}	1.94^{c}	84.77^{efgh}
Pusa Purple Cluster	2.8^{bc}	4.55^{a}	1.34^{g}	13.46^{d}	0.33^{ghi}	6.76^{de}	1.73^{ef}	81.76^{ghi}
Pusa Purple Long	2.99^{b}	4.11^{bc}	2.01^{e}	17.9^{a}	0.35^{ghi}	5.85^{fg}	1.45^{g}	78.78^{hi}
BRBL-10	1.27^{f}	3.01^{ef}	1.29^{g}	1.01^{ijk}	0.36^{ghi}	15.65^{a}	1.75^{de}	85.41^{defgh}
Arka Shirish	2.18^{de}	3.39^{d}	3.15^{bc}	1.83^{i}	1.73^{b}	7.62^{c}	1.85^{cd}	50.52^{l}

Genotypes	Biochemical characters							
	TSS	TSC	AA	TA	TC	TPC	TAN	RSA
IIHR-562	1.38^{f}	2.56^{gh}	3.3^{b}	8.85^{g}	0.85^{de}	6.63^{de}	2.06^{b}	73.77^{ij}
IIHR-563	2.32^{cde}	2.26^{h}	3.09^{c}	11.48^{e}	0.65^{efgh}	4.66^{h}	1.25^{hi}	94.46^{abc}
71-19	2.81^{bc}	4.65^{a}	2.55^{d}	0.85^{ijk}	0.85^{de}	5.75^{fg}	1.33^{h}	68.28^{jk}
BRBL-09	1.97^{e}	2.95^{ef}	2.04^{e}	0.05^{k}	0.11^{i}	6.05^{efg}	1.65^{ef}	65.12^{k}
VR-2	2.08^{de}	3.13^{def}	1.65^{f}	1.35^{ij}	0.28^{hi}	6.65^{de}	1.64^{f}	96.48^{a}
Swarna Mani	2.3^{cde}	4.5^{a}	0.66^{h}	17.95^{a}	0.58^{efgh}	1.03^{k}	1.4^{g}	64.64^{k}
Uttara	2.92^{b}	3.74^{c}	1.16^{g}	10.03^{f}	0.65^{efg}	6.46^{def}	1.46^{g}	92.86^{abcde}
Pusa Uttam	2.64^{bcd}	2.77^{fg}	1.35^{g}	16.26^{b}	0.62^{efgh}	4.45^{h}	1.16^{i}	82.37^{gh}
Rajendra Baigan -2	2.22^{de}	3.99^{bc}	2.61^{d}	1.39^{ij}	1.12^{c}	2.99^{i}	1.25^{hi}	93.6^{abcd}
BRBL-02	1.95^{e}	3.26^{de}	3.05^{c}	5.52^{h}	1.40^{c}	6.35^{efg}	1.2^{hi}	80.14^{ghi}
BRBL-04	3.78^{a}	2.92^{ef}	1.93^{e}	1.35^{ij}	1.20^{c}	7.16^{cd}	1.34^{gh}	86.37^{cdefgh}
BRBL-07	3.94^{a}	4.16^{b}	3.08^{c}	14.6^{c}	2.02^{b}	6.42^{efg}	1.32^{gh}	83.56^{fgh}
BRBL-11	2.64^{bcd}	4.01^{bc}	2.55^{d}	5.28^{h}	2.04^{b}	5.69^{g}	1.35^{gh}	87.46^{bcdefg}
BRBL-01	2.3^{cde}	2.81^{fg}	3.53^{a}	4.86^{h}	2.70^{a}	2.27^{j}	1.34^{gh}	91.69^{abcdef}
Overall Mean	2.48	3.52	2.26	7.66	0.95	6.48	1.54	81.84
C.V (%)	3.47	4.29	4.98	4.72	4.71	3.41	3.94	5.45
S.E.	0.17	0.29	0.06	0.21	0.11	0.23	0.04	2.59
C.D. 5%	0.49	0.84	0.19	0.62	0.32	0.65	0.10	7.38

Note: TSS: Total soluble solids (°Brix); TSC: Total sugar content (%); TA: Total anthocyanin content (mg/100 g FW); AA: Ascorbic acid (mg/100 g FW); TC: Total chlorophyll content (mg/100 g FW); TPC: Total phenolic content (mg/100 g FW); TAN: Total antioxidant (µmol Trolox equivalent/g FW); RSA: Radical scavenging activity (%)

round varieties. Copper ranged from 18.73 to 98.56 mg/kg, being highest in IIHR-562 and lowest in 71-19. Zinc ranged from 60.73 to 75.77 mg/kg, and the lowest quantity was noted in BRBL-02, while highest in Arka Shirish. The similar range for these macro and micronutrients in eggplant were previously reported by various researchers [30,33,32,29].

Quality parameters and bioactive compounds have been depicted in Table 3. Quality parameters like total soluble solids (TSS) ranged from 1.27 to 3.94°Brix, while total sugar content ranged from 2.26 to 4.65%. Previously there are reports of 2.83-5.29°Brix TSS [34], while 1.25-4.17% total sugar [11] and similar range [35] in eggplant has been earlier reported, but these findings contradicted that of Hanson [36] who reported sugar content in the range of 20-30%. BRBL-10 recorded the least TSS, while BRBL-07 the highest content. Total sugar was least in IIHR-563 and highest in 71-19.

Among the bioactive compounds, ascorbic acid ranged from 0.66 to 3.53 mg/100 g which was similar to that reported by Kumari et al. [11], but slightly lesser than that reported by Kandoliya et al. [37]. The lowest ascorbic acid was recorded in Swarna Mani, while highest in BRBL-01. Total anthocyanin content ranged from 0.05 to 18.85 mg/100 g FW and it varied according to colour and purple fruited genotypes recorded higher values and least in the white fruited ones. BRBL-09, the white fruited genotype recorded the least anthocyanin, while Pant Rituraj the highest. Anthocyanin content of 0.64 to 28.86 mg/100 g in different coloured genotypes have been recorded [11] and even greater anthocyanin content of 45.01 mg/100 g fresh weight for eggplant has been reported by researchers [38]. Total chlorophyll content of fruits ranged from 0.11 to 2.70 mg/100 g FW and was by earlier findings [11,35]. White fruited BRBL-09 recorded the least chlorophyll, while green fruited BRBL-01 the highest. Total phenolic content ranged from 1.03 to 15.65 mg CE/100 g FW which showed similarity with previous findings [11,39,37,40]. Swarna Mani exhibited the least amount while BRBL-10 the highest quantity of total phenolics. Total antioxidant capacity (CUPRAC) was noted in the range of 1.16 to 2.26 µmol Trolox equivalent/g FW in different genotypes and in accordance with Kumari et al. [11] and Kaur et al. [39]. Pant Rituraj exhibited the highest antioxidant capacity, while Pusa Uttam the lowest. Radical Scavenging activity ranged from 50.52 to 96.48%. Sultana et al. [41] earlier reported 70.01% radical scavenging activity through DPPH assay while Kandoliya et al. [36] observed 25.17 - 40.35% radical scavenging activity (DPPH) and Kumari et al. [11] recorded 18.25 - 40.34% among different genotypes of eggplant. The highest radical scavenging activity was noticed in VR-2 while least in Arka Shirish.

4. CONCLUSION

Considering the overall proximate nutrient composition, Pusa Uttam, Pant Rituraj and BRBL-01 could be considered promising while genotypes superior for quality parameters were BRBL-07, 71-19 and Pant Rituraj, whereas genotypes rich in bioactive compounds were Pant Rituraj, Pusa Purple Long, Pusa Purple Cluster and BRBL-01. These genotypes may be utilized in future breeding programmes for developing effective and nutritive cultivars.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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