

Pink Husked Coconut types and its Biochemical Properties

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Inflorescence of pink husked type – variety: MGD

Coconut palm, botanically known as *Cocos nucifera*, belongs to family Arecaceae, an important member of monocotyledons. India is the third largest producer of coconut and has a rich diversity of coconut types. ICAR-CPCRI has a total of 455 germplasm holdings in its genebanks maintained at Kasaragod and Kidu. Coconuts with different traits are available in the germplasm collections available at ICAR-CPCRI.

Characterization of genetic resources in coconut is a prerequisite for crop improvement initiatives in coconut as the breeding efforts are cumbersome in coconut owing to its perennial nature, long juvenile phase, large area requirement, lack of clonal propagation technique, height of palm and longer time duration for any evaluation trials. Germplasm characterization has resulted in identification and utilization of varieties with different traits and economic uses. However, unexplored diversity still exists in the coconut gene pool.

Scientific studies are lacking on certain specific traits which have already been reported in coconut. Though wide variability and diversity for many traits have been reported in coconut, characterization of individual accessions at different localities is important to utilize them for further

improvement programmes. Therefore independently maintained populations at various localities are to be tested before going in for germplasm multiplication and utilization.

Pink husk is one such trait which has already been reported in coconut by workers from different countries. Sparse occurrence of pink husked types was reported from the West Coast Tall (WCT) population cultivated in the root (wilt) disease affected tracts of Kerala, India (Thomas et al., 2016). Such types were also observed in Malayan Green Dwarf (MGD) population cultivated at CDB Farm, Ernakulam (Kerala) and also from ICAR-CPCRI Regional Station, Kayamkulam (Kerala). Rarely such trait specific palms are observed and hence systemic studies using large samples become a constraint. A coconut palm bearing fruits with pink coloured mesocarp was identified in San Ramon Tall population from ICAR-CPCRI, Kasaragod. Flowers and fruits from all bunches exhibited pink colour below the tepals and the husk fibred of tender fruits also exhibit pink colour (Jerard et al, 2016).

Coconut palms with pink husked nuts are rarely reported in farmers' fields also. Morphologically the palms are similar to normal genotype except for the conspicuous pinkish colouration observed on parts



Plumule of pink husked type- variety: MGD



Pink husked types – WCT variety from farmers' field near Kayamkulam



Tendernut of pink husked type – variety: West Coast Tall

of nut between the calyx and the husk portion. The pinkish colouration is also observed in plumular region of germinating nuts and in inflorescence immediately after its opening which will fade in the subsequent days. In few palms roots and root tips also exhibited pinkish colour.

Farmers claim that this mutant coconut type with pink husked nuts has some medicinal properties. It is being used in traditional system of medicines for curing jaundice, for preparing a medicine known as 'Elaneer kuzhambu' and also for treating many eye infections including cataract. Because of these medicinal properties, the tender nut of 'pink husked' genotype is being sold at premium price in the market. In Kareelakulangara (near Kayamkulam), Mr. Soman, a vendor sells the tendernuts of Pink husked coconut types at Rs.60/- to Rs. 65/- compared to Rs. 30/- to Rs. 35/- for normal tendernut.

Systematic study was conducted for biochemical characterization of tendernut water from pink husked types identified from Guam Tall population planted at ICAR-CPCRI, Regional Station, Kayamkulam for validating its nutraceutical properties.

Biochemical characterization: The studies revealed that a significantly higher total phenol content in the tender nut water of pink husked types as compared to control (Table 1). Higher phenol content is clearly an indication of its ability to scavenge free radicals. Antioxidative properties of the coconut water could be attributed to the presence of phenolic compounds. There was no significant difference with regard to free amino acid content in both pink husked and normal husked types. Significantly higher protein content of 86 mg/100 ml was noted in pink husked type as compared to normal husked type with 58.7

mg/100ml indicating nutritional superiority.

Free radicals are unstable molecules that are made during normal cell metabolism (chemical changes that take place in a cell). They accumulate in cells and cause damage to other molecules. This damage may increase the risk of cancer and other diseases. In humans, many diseases are associated with the accumulation of free radicals. Antioxidants can protect cells from the damage caused by free radicals and thereby minimize their impact (Rahman et al., 2016). Therefore, the search for naturally occurring antioxidants of plant origin is imperative. The antioxidant activity of tendernut water from pink husked type was evaluated by DPPH assay. Radical scavenging activity of DPPH was expressed as IC₅₀, which represents the concentration of the extract required to inhibit 50% of the free radical scavenging activity. Higher IC₅₀ value indicates lower radical scavenging activity. Present studies revealed higher scavenging activity based on DPPH assay with pink husked recording IC₅₀ value of 266.67 as compared to normal type with IC₅₀ value of 358.27. Similarly the Phosphomolybdate assay also revealed higher free radical scavenging activity of pink husked type based on IC₅₀ value of 415.17 s compared to 637.9 observed in normal husked type. Tender nut water can act as electron donors due to the presence of phenolic compounds present in it. This may justify its free radical scavenging activity. Significantly higher content of anthocyanin (25.97mg/100 g) was noted in the exocarp of pink husked types and it was negligible in normal husked type (1.464 mg/100g). The presence of higher anthocyanin content also can be correlated to higher antioxidant activity. ■