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Introduction Brittleness mutation (BM) rice , selected though ^{60}Co (gamma ray) , is a kind of mutated rice from *japonica* variety Zhonghua-11 with the characters of softness , greenness and fragility . This mutant was expected to change contents of fiber component and the linking structure of cell wall for the rice straw on the genetic basis , so as to cultivate a new kind of fodder with high digestibility . This essay aims at providing certain theoretical basis for studying the degradation efficiency of BM-rice straw by contrasting and analyzing the difference of contents of fiber component and ultra-structure between BM-rice and its wild type .

Materials and method Analysis for cellulose , hemi-cellulose , ADL (Acid detergent lignin) and AIA (Acid insoluble ash) were carried out according to principles outlined by Van Soest(1985) . All tissues were stored at 4℃ for approximately one month before post-fixation in 1 .5% OsO_4 . After several rinses , the material was dehydrated in an ethanol series and then embedded in low viscosity resin . Thin sections (60 to 100nm) were cut with a diamond knife , collected on copper grids and stained with 1% aqueous uranylacetate for 15 min followed by 15min in Reynold's lead citrate(Kornfeld A et al . , 2007) . The sections were examined in a transmission electron microscope (TEM . Phillips Tecnai 12 . Holland) .Samples taken from the fixative were cut with a razor blade to expose a gland for scanning electron microscope (SEM) analysis . The tissue was post-fixed in OsO_4 , dehydrated as above ; critical point dried in CO_2 , spurted with gold and examined in a scanning electron microscope (Goldstein J I et al . , 1992) (SEM . PHILIPS XL-30E . Holland)

Results (1) Compared with its wild type , the cellulose content of BM-rice leaf , stem and root was lower ($P<0.01$) (18 .99% , 37 .29% and 23 .34% , respectively) , and hemi-cellulose content of BM-rice leaf , stem and root higher ($P<0.01$) (46 .07% , 85 .26% and 61 .96% , respectively) . (2) Through the observation by Scanning electron microscope , there were large differences in tissue between BM-rice and its wild type . In BM-rice leaf tissue , parenchyma was enlarged , sclerenchyma was shrunken and the number of vascular bundles was reduced . In outer epidermis of BM-rice stem , distribution of strumae was sparse . In duramen of BM-rice root , the link of phloem was loosed and dispersed . (3) Through the observation by Transmission electron microscope , there were large differences in cell morphology and cell wall structure for BM-rice . In sclerenchyma cell of BM-rice leaf , the hiberarchy of cell wall was not obvious . In parenchyma of BM-rice stem , the sizes of cells were diverse and the arrangement of cells was disordered . In parenchyma cell of BM-rice root , the exterior of cell wall was knaggy .

Conclusions Based on the analysis of Cell Wall Components and Ultra-structure for BM-Rice , it can be said that BM-rice have potential advantage in its utilization . This advantage not only plays a vital role in enhancing the straw's utilization , but also be surely benefit to cow breeding industry's development in south china .

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