

..... / /

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Japonica Indica

waxy

()

PCR

waxy

n

(CT)_n

n (CT)_n

PCR

/

Waxy

:

-
-
-
-
-

(*Oryza sativa* L.)

% /

(CT)_n - bp
] (n = n =)

(CT) (CT) (CT)

(-%)

(CT) (CT) (CT)

(-%)

(%)

(CT)

waxy

%

(CT)

()

()

()

waxy

waxy

()

5-Leader

bp)

% /

(waxy

waxy

(CTTTGTCTATCTCAAGACAC)

(TTGCAGATGTTCTTCCTGATG)

()

Oryza

()

(CT)_n

Wx

()

)

Waxy

..... / /

DNA (

Waxy

()

DNA CTAB ()

DNA *Waxy* n (CT)_n

(CT)

()

() juliano OSR19

()

/ DNA

/ RM190

/ PCR dNTPs

Waxy

°C

°C

°C

°C

°C

Waxy

.....

()
 % (CT)

(CT) .
 % /

% (CT)

(CT) .
 % (-%)

(CT) (CT) (-%)

(-%)

(CT) (CT) (CT) (CT) (-%)

(CT) (CT) (CT) ()

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(

) (CT)_n

(CT) () (n= n=

(CT) (- bps)

() (CT) (CT) (CT)_n

(CT) (CT) (CT) (CT) (CT)

(%)

(CT)

()

(CT)

(CT)_n %

\hat{I} / /

WX

$(CT)_n$

\hat{a}

$-bp$

(\quad)

(\quad)

(CT)

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1. Ayres, N.M., A.M. McClung, P.D. Larkin, H.F.J. Bligh, C.A. Jones and W.D. Park. 1997. Microsatellites and single-nucleotide polymorphism differentiate apparent amylose classes in an extended pedigree of US rice germ plasm. *Theoretical Applied Genetics*. 94: 773-781.
 2. Bao, J.S., H. Corke and M. Sun. 2002. Microsatellite in starch-synthesizing genes in relation to starch physicochemical properties in *waxy* rice (*Oryza Sativa L.*). *Theor Appl Genet*. 105: 898-905.
 3. Bergman C.J., J.T. Delgado, A.M. McClung and R.G. Fjellstrom. 2001. An improved method for using a microsatellite in the rice *waxy* gene to determine amylose class. *Cereal Chem* 78: 257-260.
 4. Bligh, H. F., J.R.I. Till and C.A. Jones. 1995. A microsatellite sequence closely linked to the *waxy* gene of (*Oryza Sativa*). *Euphytica*. 86: 83-85.
 5. Doyle, J.J. 1991. DNA protocols for plants-CTAB total DNA isolation. In: Hewitt GM (ed) *Molecular techniques in taxonomy*. Springer, Berlin, pp 283-293.
 6. IRRI. 1989a. *Rice Races, Plant Types and Varietal Improvement*. 2nd edn. Los Banos, Philippines.
 7. IRRI. 1989b. *Rice Races, Plant Types and Varietal Improvement*. 2nd edn. Los Banos, Philippines.
 8. Juliano, B.O. 1971. A simplified assay for milled-rice amylase. *Cereal Sci. Today*. 16: 334-338, 340-360.
 9. Pratherpha, P. 2003. Characterization of *Waxy* microsatellite classes that are closely linked to the rice *Waxy* gene and amylase content in Thai rice germplasm. *Songklanakarin J. Sci. Technol.*, 25(1): 1-8.
 10. Shu, Q.Y., Wu. DX, Y.W. Xia, M.W. Gao, N.M. Ayres, P.D. Larkin and W.D. Park. 1999. Microsatellite polymorphisms on the *waxy* gene locus and their relationship to amylose content in *indica* and *japonica* rice, *Oryza sativa L.* *Acta Genet Sinica* 26: 350-358
 11. Tan, Y.F., J.X. Li, S.B. Yu, Y.Z. Xing, C.G. Xu and Q. Zhang. 1999. The three important traits for cooking and eating quality of rice grains are controlled by a single locus in an elite rice hybrid, Shanyou 63. *Theoretical Applied Genetics*. 99: 642-648.
 12. Temnykh, S., W.D. Park, N. Ayres, S. Cartinhour, N. Hauck, L. Lipovich, Y.G. Cho, T. Ishii and S.R. McCouch. 2000. Mapping and genome organization of microsatellite sequences in rice (*oryza sativa L.*). *Theoretical Applied Genetics*. 100: 697-712.
 13. Tian, R., G.H. Jiang, L.H. Shen, L.Q. Wang and Y.Q. He. 2005. Mapping quantitative trait loci underlying the cooking and eating quality of rice using a DH population. *Molecular Breeding*. 15: 117-124.

Evaluation of Genetic Diversity By Using of Link Maker For Amylase Content of Some Iranian Local Rice Cultivars

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Abstract

Molecular markers are the best method for investigating the genetic diversity. In this experiment, 72 cultivars including *Indica* and *Japonica* were investigated in Rice Research Centre of Iran. In order to evaluate the genetic diversity of locus *waxy* linked to the trait controlling the amylose content, PCR was performed using two oligonucleotides (484 and 485) and scored. The important Iranian cultivars of rice were screened using *waxy* microsatellite marker and classified into seven groups based on (CT)_n repeats ranging from n=7 to 20. The amplified PCR products ranged from 102 to 128 bps in length and represented the (CT)_n repeats of (CT)₇, (CT)₈, (CT)₁₄, (CT)₁₇, (CT)₁₈, (CT)₁₉ and (CT)₂₀, that were according to amylose content of cultivars in Iranian germplasm classified in seven groups for that locus and explained 70%, 72%, 78.95%, 80% and 70% of each group variations, respectively.

Keywords: Rice, *Waxy* microsatellite, Oligonucleotide, Amylose content

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