

**MOLECULAR GENETIC ASSESSMENT OF SOME
RICE MUTANTS INDUCED BY GAMMA
IRRADIATION**

By

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B. Sc. Agric. Sc. (Genetics), Tanta University, 2000

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ABSTRACT

Mohammed Hussein Essa Ayaad. Molecular genetic assessment of some rice mutants induced by gamma irradiation. Unpublished Ph.D. Thesis, Department of Genetics, Faculty of Agriculture, Ain Shams University, 2015.

Five local rice cultivars (*Oryza sativa*, L.); Sakha 101 (SK101), Sakha 102 (Sk102), Sakha 103 (Sk103), Giza 177 (Gz177) and Egyptian Jasmine (E. Jas), in addition, eight mutant rice genotypes in M₆ generation; Egy22, Egy23, Egy24, Egy202, Egy32, Egy33, Egy34 and Egy316 were used in this study. These genotypes were used to evaluate yield-related traits, cooking and eating quality traits, aroma content and blast disease resistance. Egy316 (111 days) was earlier than other genotypes and recorded the highest 1000 grain weight (32.7g), while the mutant Egy202 revealed the maximum number of panicles/m². Maximum grain yield (4.67 ton/fed.) was recorded by Egy22, and was the strongest aromatic genotype. While Gz177 showed the highest head rice percentage (HR%) followed by Egy24. On the other hand, the highest amylose content percentage (AC%) was recorded by Egy23 (25.3 %). Under natural and artificial infection of blast disease all studied genotypes were resistant except Sk101. Thirty two SSRs primers were used to detect early maturing, high tillering, aroma content and blast disease resistance. a- The sizes of SSRs fragments ranged from 50-2917 bp. The total number of amplified bands were 69 bands, while the total number of polymorphic bands, 67, representing 97 % polymorphism. The RM125 primer showed divided the 13 genotypes into two groups according to grain shape, while RM135 showed one unique positive marker on the high tillering mutant (Egy202).

Key words:

Rice, SSRs, Mutation, Early maturing, High tillers, aroma, blast disease .

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CONTENTS

	Page
LIST OF TABLES	III
LIST OF FIGURES	V
LIST OF ABBREVIATIONS	VI
INTRODUCTION.....	1
REVIEW OF LITERATURE	5
1. Evaluation of rice performance using mutation induction	5
2. Aroma and grain quality of different rice genotypes	9
3. Assessment of rice genotypes for blast disease resistance	12
4. Molecular characterization of rice genotypes by SSRs technique.....	15
MATERIALS AND METHODS.....	21
1. MATERIALS	21
1.1. Plant Materials.....	21
2.METHODS	23
2.1. M ₆ generation	23
2.2. M ₇ generation	24
2.3. Statistical analysis	24
2.4. Evaluation of grain quality	24
2.4.1. Different traits of grain quality	25
1) Hulling percentage	25
2) Milling percentage	25
a) Physical quality of grains	25
1. Grain length (mm)	25
2. Grain width (mm)	25
3. Grain shape	26
4. Head rice yield	26
b) Cooking and eating quality traits of rice	26
1. Amylose content (AC)	26
2. Gelatinization temperature (GT)	27
3.Aroma content	28
2.5. Evaluation of blast disease resistance	28
2.5.1. Blast nursery test at seedling stage under natural infection..	29
2.5.2. Blast resistance test at seedling stage under artificial inoculation in the green house.....	31
2.6. Molecular genetic analysis	31
2.6.1. DNA extraction procedure.....	32
2.6.2. Simple sequence repeats (SSRs)	34
a) SSRs protocol	34

b) PCR reaction mix	37
c) PCR amplification	37
d) Separation of the amplification products	37
e) Genetic similarities based on SSRs bands.....	38
f) Cluster analysis for the rice genotypes.....	39
RESULTS AND DISCUSSION.....	41
1. Yield-related traits.....	41
1.1. Number of days to maturity	41
1.2. Plant height (cm).....	44
1.3. Panicle length (cm).....	45
1.4. Panicles (effective tillers) number/m ²	47
1.5. Grains number per panicle.....	50
1.6. Panicle weight (g).....	51
1.7. One thousand grains weight (g) means.....	53
1.8. Grain yield/faddan (ton/fad) mean.....	54
2. Rice grain quality.....	56
2.1. Correlation coefficient among rice grain quality traits ...	59
3. Evaluation of blast disease resistance.....	60
3.1. Evaluation of blast disease under natural infection.....	61
3.2. Evaluation of blast disease under artificial infection.....	62
4. Molecular evaluation using Simple Sequence Repeats (SSRs)...	65
4.1. SSRs analysis of the 13 rice genotypes.....	65
4.1.1. The similarity indices for all genotypes using the 32 SSRs primers.....	68
4.1.2. Dendrogram of the relationships among the 13 rice genotypes.....	69
4.2. Molecular markers using SSRs-PCR technique	70
4.2.1. SSRs molecular markers for early maturing.....	70
4.2.2. SSRs molecular markers for high tillering.....	73
4.2.3. SSRs analysis for aroma content	75
4.2.4. SSRs analysis for blast disease resistance.....	78
4.2.4.1. Genotypes identification by unique markers.....	82
4.3. General conclusion.....	84
SUMMARY.....	87
REFERENCES.....	93
ARABIC SUMMARY	93