Genetic Diversity in Hyper Glucose Oxidase Producing *Aspergillus niger* UAF Mutants by RAPD and SSR

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Contents

Aspergillus

- Group of filamentous fungi
- 180 species
- Causes diseases
- Economically important

Aspergillus niger

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- Haploid
- Filamentous fungi

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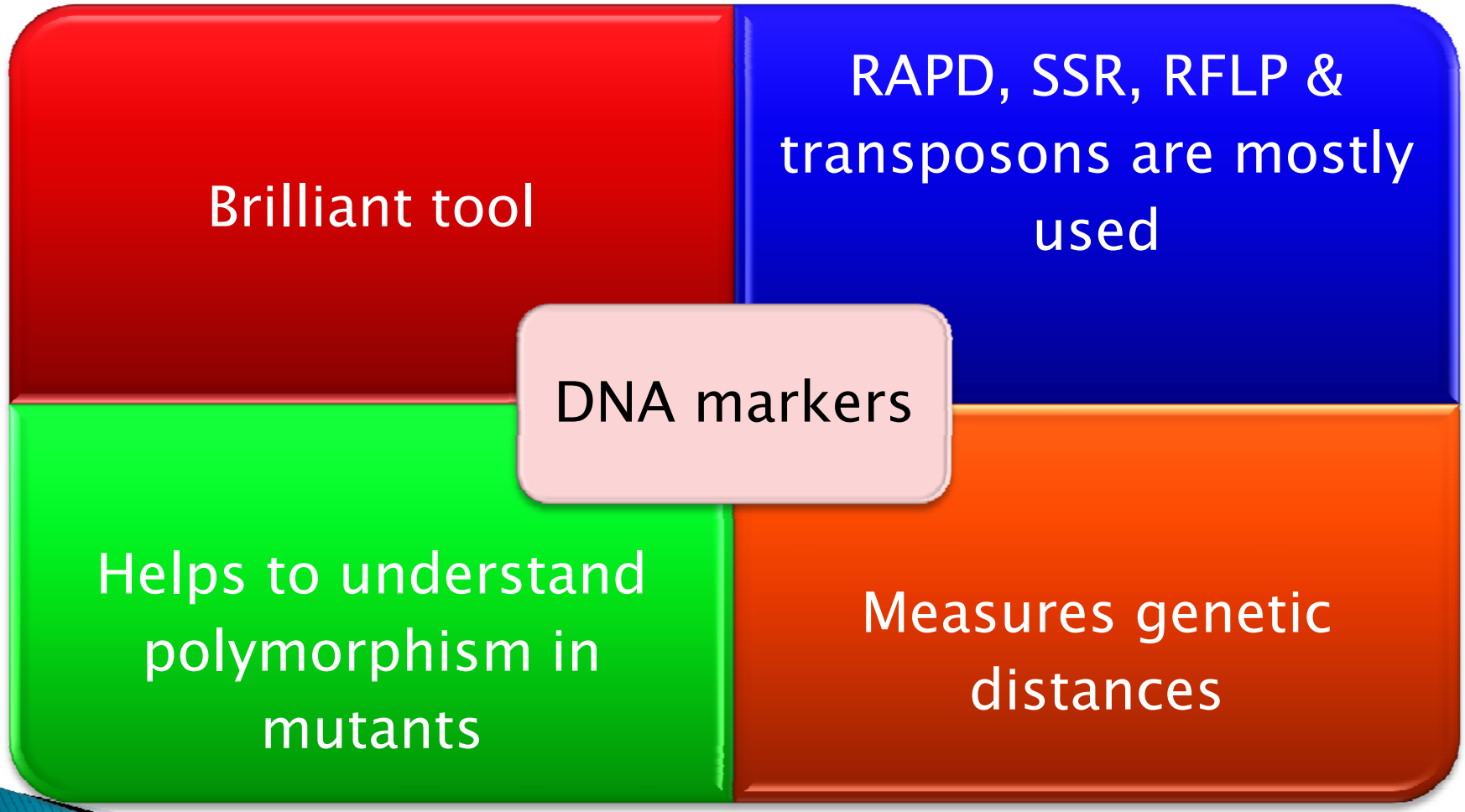
- Cary out efficient post translational modification
- Produces enzymes, afflatoxins, mycotoxins, PGRs

Glucose Oxidase

β-D Gulucose : oxygen-oxidoreductase

- *Production of gluconic acid in food and bewerage industries*
- *Maintains food flavor and color stability*
- *Quantification of glucose in biological fluids*
- *Removal of glucose and oxygen.*

Utility of DNA based markers



objectives

- Evaluation of genetic distance among 20 mutants and wild type strain of *A.niger* UAF
- Estimating the level o*f trans*cription of GOx gene.
- Exploitation of information generated in the studies for the stable and enhanced GOx production
- Exploitation of results to prepare Glucose diagnostic kit.
- Isolation and cloning of GOx gene with high transcription level in microbial species.

Progress

- 20 mutants and parent strain of *A. niger* have been obtained from Enzyme Biotechnology lab. Department of Chemistry and Biochemistry, University of Agriculture, Faisalabad.

Methodology used

- Growth of Mutants on Potato Dextrose Agar (PDA)
  - a- Medium preparation and composition
  - b- Streaking and culture conditions:
- Production of Mutants on Vogel's Medium
  - a- Medium preparation and composition
  - b- Inoculation and culture conditions

Media composition

Potato Dextrose Agar	
Chemical	Quantity (g/100ml)
Glucose	2g
Agar	2g
Starch	2g
Urea	3g
KH_2PO_4,	0.008g
$MgSO_4.7H_2O$	0.05g
$ZnSO_4.7$ H_2O	0.001g
KCl	0.015g

Vogel's medium	
Chemical	Quantity (g/100ml)
Glucose	2g
Peptone	0.1g
$MgSO_4.7H_2O$	0.02g
NH_4NO_3	0.2g
$(NH_4)_2$ SO_4	0.4g
Tri-sodium citrate	0.5g
Yeast extract	0.2g

Planning ahead

- Optimization of protocol for extraction of DNA of *A. niger*
- Molecular characterization of *A. niger* UAF mutants by RAPD and SSR
- Optimization of protocol for extraction of total RNA and mRNA (Gox gene)
- Development of cDNA from mRNA of Gox gene
- Determining level of transcription of Gox gene


THANKS