GENETIC STUDIES ON SENNA (CASSIA SP)

BY

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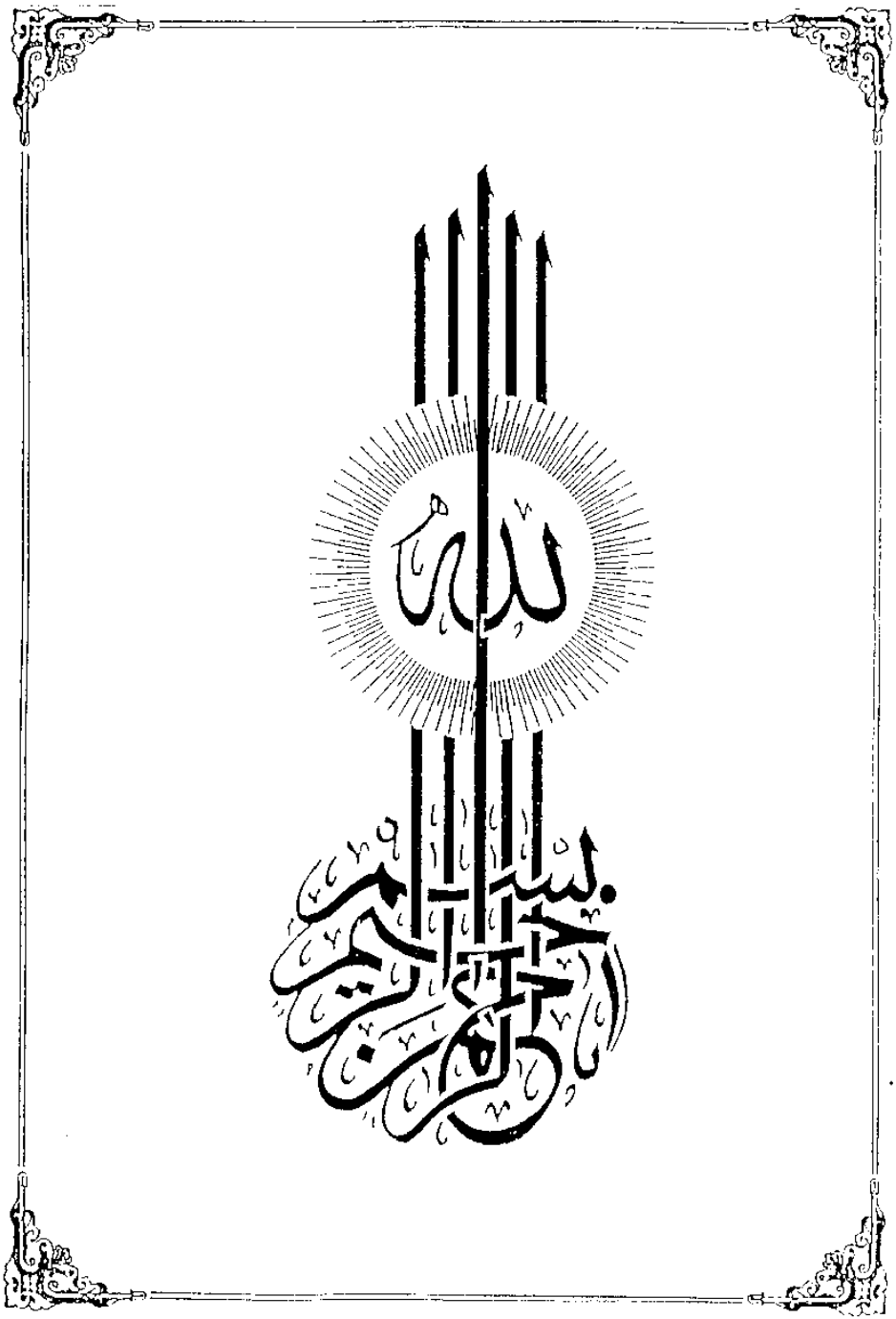

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ABSTRACT

The main aim of the present study is to evaluate the genetic background of the 30 lines of the self-pollinating *Cassia obovata* species distributed in Egypt, that considered as an important resource of sennosides which mainly reliable for the strong laxative and purgative effects. The quantitative characters studied in both field and green house experiments showed that each of the 30 senna lines represented a unique combination of expressions which indicated the discrete nature of these lines with their different genetic backgrounds. Similar results were obtained from gel electrophoretic studies which revealed an isozyme polymorphisms among most of the banding patterns of ten enzymes studied. It was possible to identify each line by a unique class pattern combination. Meanwhile, these lines showed the same cytological backgrounds (2n=28) with some abnormalities in mitotic metaphase and most of the meiotic I and II stages, which may be attributed to occurrence of natural aneuploidy in senna species. Moreover, new potent lines of senna could be developed and recognized in their total sennoside contents (12.98%) that may be useful in pharmaceutical industry. An evidence of the background differences of the 30 lines could be obtained from the remarkable multiplicity in sennoside compounds. The study of flavonoid compounds showed a striking characteristic in the studied lines of senna with the marked qualitative variation that occurred in most of the compounds. This variation is reasonable evidence for the differences in the genetic background of each line. Moreover, two different flavonoid groups with their derivatives were identified and a branched pathway was generally suggested in flavonoids synthesis turnover under the genetic control in senna.

KEY WORDS :-

Cassia obovata lines
Leguminosae
Genetics and Breeding
Quantitative characters
Isozyme gel electrophoresis; EST, EST-D, LAP, ME, G-6-PDH, PGDH, GOT,CAT, MPI, PGM
Cytological analysis at mitotic and meiotic divisions
Sennosides, A, B, C and D contents (%)
Flavonoid compounds; flavones and flavonols
High performance liquid chromatography (HPLC)
Thin layer chromatography (TLC)
Large scale column chromatography
One and two-dimension paper chromatography

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