SIGNIFICANT OUTCOME
1. As far as available literature is concerned, it seems that it has been the first attempt to induce genetic variations in *A. paniculata* germplasm using the methodology of induced mutagenesis. *A. paniculata* has been found to be sensitive to the administered doses of both EMS and dES.

2. Fourteen viable macromutants were induced at M2 following mutagenic treatments and all of them bred true at M4. Excepting *viridis* (digenic mode of inheritance), the mutant trait(s) (analyzed at M3; selfed segregation) segregated into either 1:1 or 3:1 ratio thereby indicating possible monogenic inheritance of the trait(s). The mutants formed $2n=50$ chromosomes in their PMCs alike to that of control.

3. Mutants namely *unbranched*, *broad leaf*, *narrow leaf* and *drooping leaf* were associated with concomitant traits, which persisted throughout M2 to M4 generations.

4. Bushy and *broad leaf 1* mutants yielded significantly enhanced amount of andrographolide content than normal plants as evidenced by HPTLC analysis; while, the rest were with genetic/morphological markers promising for efficient breeding.

5. RAPD band profile and cluster analysis by UPGMA revealed relatedness as well as distinctiveness among/between the germplasm, which is significant for inter-crossing and enhancing genetic diversity in the species.

6. The plant types evolved seems to be in the direction of the objective underlined and correspond closely to the ideotype been looked for in *A. paniculata*. Thus, variations released have widened the gene pool and such variations did not exist in natural population.