Re-association Kinetics of the DNA of the Reptile, Agama Agama Agama (L).

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Abstract:

The re-association kinetics of the Agama agama agama DNA and some of the characteristics of the highly repetitive DNA sequence were investigated on hydroxyapatite column with the specific objectives of determining the re-association profile at 60°C for this organism and also determining the amount and nature of the highly repetitive DNA sequences. The re-association curve showed that the genome consists of the three components characteristic of eukaryotic genomes.

These components are highly repetitive, intermediate repetitive and single or unique copy sequences which form 18%, 8% and 74% of the total genome respectively. A Cot 1/2 of 370 was obtained for the genome, and this is a reflection of a high proportion of unique sequences in this animal and also indicates a fairly complex genome. Thermal elution studies on the total DNA, highly repetitive DNA and on mouse DNA (for comparison) were carried out on HA, and melting profiles deduced from the results. Two peaks (a minor and a major) were obtained for both the native DNA and highly repetitive.

The minor peak formed about 3.6% of the native genome and about 9.6% of the highly repetitive DNA sequences. It elutes at 65°C to 75°C in both cases, and this indicates that it is AT-rich. The major peak of the highly repetitive DNA has a melting temperature of 89. 5°C, giving a base composition of 49. 5% G + C. The results suggest that repetitive sequence is localised on the chromosomes, while the bulk may be dispersed throughout the genome. The native DNA shows a Tm of 85.6^0C which gives a base composition of 40. 2% G + C. This value does not vary from a general recently evolved eukayotic pattern, and the totality of the results obtained for the DNA of Agama shows that the animal is evolutionarily advanced.

Keywords: Kinetics/ hydroxyapatite/ DNA sequence/ Agama/ eukaryotic genomes/ thermal elution

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