Short Communications

Heterogeneity of nuclear RNA

On the basis of studies on cell nuclei isolated in non-aqueous media, KAY *et al.*[1] concluded that the ribonucleic acid of the cell nucleus (nRNA) could be further fractionated. Further evidence in support of this view is presented in this note.

From rabbits which had received ^{32}P as inorganic phosphate, thymus nuclei were prepared in 0.25 *M* sucrose containing 0.002 *M* $CaCl_2$. They were extracted with phosphate buffer as described by ALLFREY *et al.*[2] to yield ribonucleoprotein fraction I. The nRNA remaining in the nuclei after further extraction with *M* NaCl (ribonucleoprotein fraction II) was digested with alkali to the constituent nucleotides as described by SMELLIE *et al.*[3] and these, together with the corresponding nucleotides obtained by alkaline digestion of fraction I, were separated by ionophoresis on paper for radioactive counting. These RNA fractions are designated nRNA I and nRNA II respectively.

From the results shown in Table I it is clear that nRNA I and nRNA II are distinct from each other and that both are much more active than is the cytoplasmic RNA (cRNA). Similar differences were observed in the case of thymus cells obtained from rabbits to which ^{14}C-formate had been administered. It is clear therefore that nRNA I does not consist merely of contaminating cRNA.

TABLE I

SPECIFIC ACTIVITIES OF RNA'S AND DNA FROM RABBIT THYMUS NUCLEI 2 HOURS AFTER INJECTION OF 2 mc ^{32}P AS INORGANIC PHOSPHATE

	c.p.m./100 µg P			
	cRNA	*nRNA I*	*nRNA II*	*whole DNA*
Adenylic acid	3795	13200	7800	460
Guanylic acid	2795	7530	7780	
Cytidylic acid	2700	9500	6360	
Uridylic acid	3910	10900	10350	

When such sucrose-$CaCl_2$ nuclei were extracted with dilute citric acid, the extract contained a nuclear RNA of low activity whereas the nRNA which remained had a much higher activity. This was in agreement with results previously found with nuclei prepared from non-aqueous media[1]. The activity of the extracted nRNA was lower and that of the residual nRNA higher than the activities of either nRNA I or nRNA II.

Determination of the molar proportions of bases by method (a) of CROSBIE *et al.*[4] showed that nRNA I and nRNA II differed in composition from each other and from cRNA not only in rabbit thymus but in calf thymus, spleen and liver also.

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