charidic chains, an absence which has already been demonstrated in the transferrin of the dogfish[9,10].

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BIOCHEMISTRY

Optical Rotatory Dispersion of Double-stranded RNA

A role in replication[1–3] has been proposed for the double-stranded RNA isolated after infection of cells with single-stranded RNA viruses[4]. It is therefore interesting to investigate the structure of this unusual complex in solution.

Single-stranded RNA was isolated from purified MS2 bacteriophage using the method of Strauss and Sinsheimer[5]. Double-stranded MS2 RNA was isolated by the method of Franklin[6]. The existence of the double-stranded structure was determined by ribonuclease resistance and sharpness of the thermal "melting" curve[4,7].

The optical rotatory dispersion of single- and double-stranded MS2 RNA is shown in Fig. 1. A marked similarity in Cotton effects is apparent. This suggests that the long intermolecular helices of the double strands and the short intramolecular helices of the single strands[8] have the same geometry. This is probably the "*A*" helical form of DNA found in RNA fibres examined by X-ray diffraction[9,10]. In addition, the double-strand curve shows a new peak at 276 mμ and a more laevorotatory peak at 228 mμ relative to the single-strand curve. Sarkar and Yang have shown that, unlike helices formed by polyadenylic acid complexed with polyuridylic acid[11], helices formed by polyguanylic with polycytidylic acid have a peak at 276 mμ and a laevorotatory peak near 230 mμ ($[\alpha] \simeq -7{,}000$)[12]. Although rotational influences caused by non-complementary base interactions[13] cannot be ruled out, the main differences between the curves are consistent with those expected from increased guanine-cytosine base pairing.

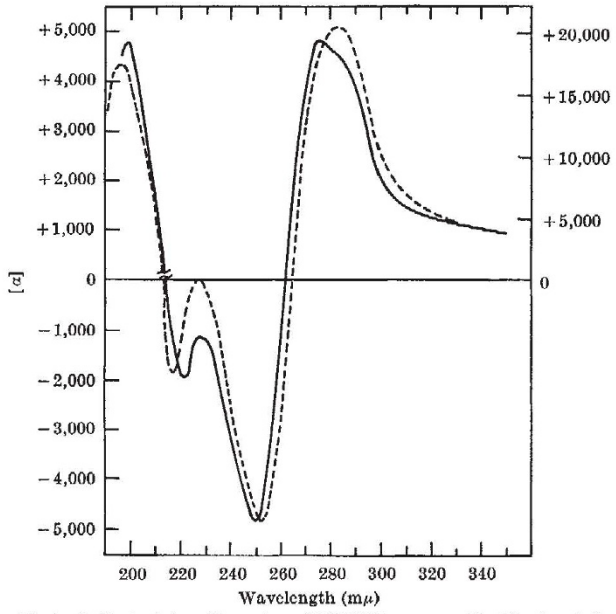

Fig. 1. Optical rotatory dispersion of MS2 RNA. ———, Double-stranded RNA in 0·1 molar sodium chloride, 0·05 molar *tris*, 1 mmolar EDTA, *p*H 7·0. – – –, Single-stranded RNA in 0·1 molar sodium chloride, 0·05 molar sodium phosphate buffer, *p*H 7·0. Use right ordinate below 215 mμ.

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Inhibition of Protein Synthesis in Rat Intestinal Slices by Tetracycline

The tetracycline group of drugs have been found to inhibit protein synthesis in *in vitro* systems composed of ribosome and supernatant fractions derived from microbial as well as mammalian cells[1–3]. It has also been reported that chlortetracycline reduces the *in vivo* incorporation of ^{35}S-methionine into liver, spleen, kidney, and gastric mucosa proteins in the rabbit[4]. In this report tetracycline was administered to rats and intestinal slices were later tested *in vitro* for incorporation of ^{14}C-L-leucine into protein. Tetracycline clearly inhibited protein synthesis by rat jejunal slices.

Female Wistar rats weighing 140–160 g were fasted for 16 h and given either saline (controls) or tetracycline (400 mg/kg body weight) intraperitoneally. After 4 h the animals were killed and the small bowel rinsed *in situ* with 50 ml. of ice cold 0·85 per cent sodium chloride. The upper half of the intestine was everted over a glass rod and intestinal slices prepared from the proximal 25 cm of small bowel. Six jejunal slices weighing between 0·40 and 0·50 g were added to each incubation flask, which contained the following: 0·5 ml. of five-fold concentrated low calcium Krebs–Ringer bicarbonate buffer, *p*H 7·4, 1·0 ml. of 0·15 molar sodium bicarbonate, 7·5 μmoles glucose in 1·0 ml. water, and 0·1 uc. of ^{14}C-L-leucine (275 mc./mmole) in 0·5 ml. water. The incubations were carried out at 37° C with continuous shaking and gassing with 95 per cent oxygen –5 per cent carbon dioxide for 1 h. The reaction was stopped by adding 4 ml. of 10 per cent trichloroacetic acid (containing 10 mg of carrier leucine) and the contents of each flask were homogenized. The protein precipitates were washed 3 times with 4 ml. of cold trichloroacetic acid and dissolved in 2·0 ml. of '*NCS*' solubilizer. Triplicate aliquots of the dissolved precipitates were added to a counting solution described by Tye and Engel[5], and assayed for radioactivity in a liquid scintillation spectrometer. Quenching was corrected for by using ^{14}C-toluene as an internal standard.