TABLEAU I

VALEURS EXPRIMÉES EN μmoles POUR 100 g DE SUBSTANCE FRAÎCHE

	AMP	*GMP + UMP + IMP*	*ADP*	*UDPA*	*UDPG*	*CTP*	*ATP*	*GTP + UTP*
Zone superficielle	16.4	11.9	22.3	39.6	72.8	29.5	377.5	145.2
Cortex	11.7	9.4	15.0	24.6	59.8	25.1	273.5	97.9
Noyau	17.2	15.4	33.0	10.6	25.4	traces	44.5	15.3
Épithélium recalculé	58.7	30.4	87.5	165	189	91.8	1313	571

selon BRIGGS[6], celui des pentoses selon MEJBAUM[7]. Le tracé ci-contre de deux chromatogrammes montre avec évidence les différences entre la zone corticale et centrale.

Les résultats quantitatifs de nos essais qui ont porté sur 24 cristallins sont résumés dans le tableau.

Il ressort de l'examen de ce tableau que la teneur en nucléosides monophosphates de l'adénine, de la guanine, de l'uracyle et de l'hypoxanthine est plus élevée au niveau de la zone centrale que dans le cortex ou la partie superficielle du cristallin. Il en est de même pour l'adénosine-diphosphate. Par contre, pour les autres nucléosides diphosphates et tous les nucléosides triphosphates, les valeurs sont nettement plus fortes au niveau de la zone superficielle et corticale. Si en défalquant la part du cortex dans la zone superficielle, on évalue selon une formule développée ailleurs[8] la teneur en nucléotides de l'épithélium, il s'avère que ce dernier contient infiniment plus de nucléotides polyphosphates que la zone centrale. En tenant compte du fait que les cellules épithéliales sont à l'origine des fibres cristalliniennes qui se trouvent avec le temps refoulées vers le centre, on peut établir un parallélisme entre l'âge des cellules cristalliniennes et leur teneur en nucléotides polyphosphates. Les cellules jeunes en contiennent beaucoup plus que les fibres anciennes.

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Phosphorolysis of leaf ribonucleic acids*

In considering the mode of formation of plant-virus ribonucleic acid (RNA) it is important to know whether its structure and properties differ from or resemble those of the RNA from normal leaves. The isolation of RNA from plant tissues has been described by several investigators[1–3]. REDDI[3] has found that the base composition of normal tobacco-leaf RNA differs significantly from that of tobacco-mosaic-virus RNA. We have prepared RNA from tobacco and spinach leaves and have also found that their base composition differs from that of tobacco-mosaic-virus RNA (Table I).

It has recently been reported[6] that the rate of phosphorolysis of tobacco-mosaic-virus RNA, in the presence of polynucleotide phosphorylase, is much faster than that of bacterial or yeast

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TABLE I

MOLAR RATIOS OF BASES OF RIBONUCLEIC ACIDS OF SPINACH AND TOBACCO LEAVES

Leaf ribonucleic acids were prepared by the method of MARKHAM[2]. Some samples of tobacco-leaf ribonucleic acid prepared by the method of REDDI[3] did not differ in base composition from the other samples. The analyses were carried out by the method of CROSBY *et al.*[4] following hydrolysis according to MARSHAK AND VOGEL[5]. Adenine was taken arbitrarily as 1.00.

Source of RNA	*Adenine*	*Guanine*	*Uracil*	*Cytosine*	$\frac{Purines}{Pyrimidines}$
Spinach	1.00	1.09	0.70	0.87	1.33
Tobacco*	1.00	1.16	0.80	0.84	1.32
Tobacco**	1.00	1.13	0.72	0.80	1.40
Tobacco-mosaic-virus RNA***	1.00	0.89	0.98	0.62	1.18

* Connecticut broad leaf.
** Havana seed.
*** Data of REDDI[3] given for comparison.

RNA, a fact which appears to be related to a slight tendency of the viral RNA to assume a multistranded structure*. It was, therefore, of interest to determine whether normal leaf ribonucleic acids also differ from tobacco-mosaic-virus RNA in their susceptibility to cleavage by polynucleotide phosphorylase. Fig. 1 shows that this is indeed the case, since the leaf ribonucleic acids were phosphorolyzed at a very slow rate. Polyadenylic acid and yeast RNA, which had been previously investigated[6], were used for comparison. Rat-liver RNA, not previously studied, is also phosphorolyzed slowly.

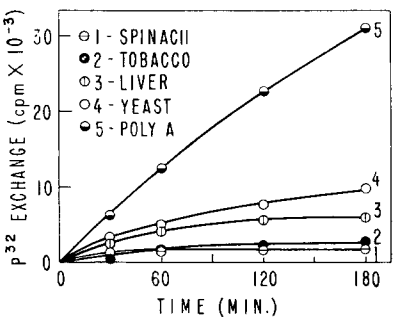

Fig. 1. Time course of phosphorolysis of several polyribonucleotides measured with ^{32}P. The method has been previously described[6]. The reaction mixture for each polynucleotide, in a final volume of 0.6 ml, consisted of potassium phosphate buffer, pH 7.4, (containing ^{32}P, $2 \cdot 10^5$ c.p.m.), 5.3 μmoles; $MgCl_2$, 5 μmoles; *Azotobacter* polynucleotide phosphorylase (specific activity, 50), 2.75 units; and polynucleotide, about 0.5 mg (the amounts of polynucleotide were adjusted to give the same optical density at 258 mμ in all cases). Incubation with shaking at 30°. 0.05 ml aliquots were withdrawn for analysis at the indicated times. Curve 1, spinach RNA; curve 2, tobacco RNA; curve 3, rat-liver RNA (prepared by the method of KAY AND DOUNCE[9]); curve 4, yeast RNA (Schwarz Laboratories); curve 5, polyadenylic acid.

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* A similar conclusion may be drawn from studies of formaldehyde binding[7] and ribonuclease cleavage[8] of tobacco-mosaic-virus RNA.