

INHIBITORY EFFECT OF HETEROPOLYANIONS ON TOBACCO MOSAIC VIRUS

B. Sharma, K. D. S. Yadava, Shyam Narain

Department of Chemistry, University of Gorakhpur, Gorakhpur — 273001, U. P. India

Received August 30, 1983; revised November 30, 1983

Heteropolyanions (I) constitute a distinct category of inorganic compounds. The antiviral activity of ammonium-5-tungsto-2-antimoniate, a salt of an heteropolyacid, against encephalomyocarditis and vesicular stomatitis viruses was reported (2). The present communication describes the antiviral activities of 12-tungsto zinc(II) acid, potassium 13-vanado manganate(IV), potassium 13-vanado nickelate(IV) and sodium tungsto borate against tobacco mosaic virus (TMV). The substances were prepared as described elsewhere (3, 4, 5). Pure TMV culture was maintained on *Nicotiana tabacum* var. White Burley. The local lesion method was used for virus assay employing *Chenopodium amaranticolor* as test plant host.

For the preparation of virus inoculum, young infected leaves showing severe symptoms were macerated with equal amount of 0.1 mol/l phosphate buffer pH 7.2 in a mortar. The extract was filtered through double layered muslin cloth and centrifuged at 5 000 rev/min for 10 min. The sediment was discarded and the clear supernatant fluid was used for inoculum purpose. One ml of this virus extract was mixed with one ml of the diluted solutions of heteropolyanions and incubated for 10 min. Inoculations were made gently and uniformly to the upper surface of the leaves. The leaves were sprayed with water to remove the excess of inoculum. One ml of the infective sap mixed with one ml of water served as control. All experiments were carried out in an insect-free glass house under natural light.

The results summarized in Table show that the inhibitory effect of heteropolyanions follows the sequence 12-tungsto zinc(II) acid:potassium 13-vanado manganate(IV):potassium 13-vanado nickelate(IV). Sodium tungsto borate exhibited no antiviral property (not included in the Table).

Heteropolyanions	Dilution ($\mu\text{g/ml}$)	Incubation period (days)	*Average no. of local lesions (T/C)	Percentage of inhibition
12-Tungsto zinc (II) acid	100	10	2/53	96.23
	10	9	10/76	86.8
	1	9	16/54	70.37
Potassium 13-vanado manganate (IV)	100	7	17/52	67.3
	10	8	28/63	55.5
	1	8	32/61	47.5
Potassium 13-vanado nickelate (IV)	100	9	37/68	45.5
	10	8	47/70	32.8
	1	8	52/62	16.1

T = treated leaves, C = control leaves; *produced on 10 leaves of *C. amaranticolor*

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