

Analysis by Monoclonal Antibodies of H3N2 Subtype Influenza A Viruses in Japan and Southeast Asia Prior to 1983

Legend. Number of isolates of Hong Kong (H3N2) influenza virus from 95 strains in different groups determined by four monoclonal antibodies, 1968–1982.

Influenza group	Antigen profile with monoclonal antibodies*				No. (%) isolated during				
	H	M	O	Q	1/68–12/76	1/77–12/80	1/81–5/82	6/82–9/82	10/82–12/82
I (before Texas/77)	16–32	16–32	16–32	16–32	18 (90)	1	0	0	0
II (Tokyo/77)	1,024–2,048	16–64	16–64	16–32	0	3	0	2	1
III (Bangkok/79)	4,096–16,384	1,024–4,096	16–128	256–1,024	0	6 (50)	4	2	0
IV (Kyoto/81)	4,096–8,192	16–128	16–128	128–512	0	2	29 (78)	13 (68)	4 (57)
V (Niigata/81)	16–128	32–128	32–128	128–512	1	0	3	0	1
Other (ungrouped)	128–16,384	32–1,024	64–256	256–512	1	0	1	2	1
Total	20	12	37	19	7

NOTE. Four stable hybridoma clones secreting HA monoclonal antibodies to A/Bangkok/1/79 RX-73 (supplied by Dr A. P. Kendal, Centers for Disease Control, Atlanta) were obtained after a fusion of NS-1 cells and spleen cells of a BALB/c mouse immunized with ether-Tween 80-split virus. Culture supernatants of the hybridomas not treated with receptor-destroying enzyme were used for HAI tests with 95 strains of H3N2 influenza virus. Sixty-one of the strains were from Japan, 26 were from Thailand, three were from the Philippines, two were from the United States, and one each were from England, Australia, and Taiwan.

* Expressed as the reciprocal of the highest dilution with a positive test.

Summary

Antigenic drifts of naturally occurring H3N2 strains of influenza virus existing prior to 1977 have been analyzed with monoclonal antibodies prepared against viruses isolated in 1968 [1, 2]. By using monoclonal antibodies raised to A/Bangkok/1/79 hemagglutinin, which represented the most recent member of the Hong Kong subtype in 1980, patterns of HAI antibody titers to naturally occurring H3N2 isolates from 1968 to 1982 were studied. Although only four monoclonal hybridomas—H, M, O, and Q—were obtained and used for the study, 95 virus strains were definitively assigned to the following six groups: group I (pre-Texas/77), II (Tokyo/77), III (Bangkok/79), IV (Kyoto/81), V (Niigata/81), and ungrouped viruses.

Groups II to V were also identified with HAI tests using a panel of postinfection ferret antisera to representative strains of those groups. However, HAI tests with the panel of the four monoclonal antibodies gave much clearer results and had higher reproducibility than did the ferret sera.

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The data presented are limited to the results of tests with only four monoclonal antibodies, and their assignment to the six groups of monoclonal antibodies enumerated by Jackson et al [3] remains to be studied.

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