—Short Communication—

Antigenic analysis of influenza viruses isolated in Thailand in the rainy season, 1989

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In the rainy season of 1989, 72 strains of influenza viruses were isolated in Thailand by using MDCK cell cultures, which included 36 samples belonging to H1N1, 24 samples belonging to H3N2 subtype of type A and 12 samples of type B¹⁾. The identified viruses were inoculated into developing hen's eggs of 10 days' age, and 22 (32.6%) of them were adapted to the egg after one passage, which included 8/36 (22.2%) of H1N1, 7/18 (38.2%) of H3N2 and 7/8 (87.5%) of type B virus. The adapted viruses were analyzed antigenically with the haemagglutination inhibition (HI) test using mouse antisera raised to 16 reference viruses shown in **Table 1** and **2**.

As shown in **Table 1**, among eight H1N1 strains isolated in Chiang Mai in 1989, four (A/Chiang Mai/28, 71, 73 and 105/89) (50%) were antigenically similar to A/Yamagata/32/89 as well as to A/Chiang Mai/39 or 101/87 (i.e., any differences of HI titers from those of A/Yamagata/32/89 and A/Chiang Mai/39 and 101/89 were within two folds), one (A/Chiang Mai/120/89) (13%) was similar to A/Yamagata/120/86 (i.e., any difference of HI titer was within 2 folds), and the other three (A/Chiang Mai/27, 62 and 108/89) (38%) were antigenically not so different from A/Chiang Mai/39/87 or A/Yamagata/32/89 (i.e., only four folds differences of the HI titers to anti-A/Chiang Mai/39 and/or 101/89 sera were observed). Thus, seven out of eight strains (87.5%) of H1N1 influenza virus isolated in Chiang Mai in August, 1989 were antigenically closely related to what prevailed in Chiang Mai in 1987 and in Japan in 1989, suggesting that the antigenic variation of H1N1 subtype in Thailand and in Japan was minor during 1987 to 1989. Incidentally H1N1 subtype of the virus has not been isolated in Japan from May, 1989 until February, 1991²⁾, but 11 strains of the subtype were isolated in Chiang Mai in August 1990³⁾.

As shown in **Table 1**, among 10 H3N2 strains, seven (A/Bangkok/235, 238 and 246/89 and A/Chiang Mai/9, 52, 80 and 86/89) (70%) were antigenically similar to A/Akita/4/88 which was equivalent to A/Hokkaido/20/89 (i.e., any difference of HI titer was within two folds), two (A/Chiang Mai/48 and 111/89) (20%) were similar to A/Sichuan/2/87 (i.e., any difference of HI titer was within two folds), and the other one (A/Chiang Mai/51/89) (10%) was antigenically not so different from A/Akita/4/88 (i.e., difference of HI titer was within two folds, except that to anti-A/Fukuoka/c-29/85 serum which was four folds). According to an antigenic analysis of H3N2 subtype isolated in Japan (Influenza Survey of 1989–1990 Season by NIH, Tokyo)²⁾, 67% out of 502

Table 1 Haemagglutination inhibition reaction of type A influenza viruses isolated in Thailand in July and August, 1989

Virus	Mouse antiserum raised to :				
	A/Bangkok/ 10/83	A/Yamagata/ 120/86	A/Chiang Mai/ 39/87	A/Chiang Mai/ 101/87	A/Yamagata/ 32/89
H1N1 subtype	A/Bangkok/10/83	128	64	< 32	< 32
	A/Yamagata/120/86	64	2,048	512	512
	A/Chiang Mai/39/87	32	1,024	256	512
	A/Chiang Mai/101/87	< 32	1,024	128	256
	A/Yamagata/32/89	< 32	1,024	128	256
	A/Chiang Mai/27/89	< 32	512	64	512
	A/Chiang Mai/28/89	32	2,048	256	512
	A/Chiang Mai/62/89	< 32	512	64	256
	A/Chiang Mai/71/89	< 32	1,024	256	256
	A/Chiang Mai/73/89	< 32	1,024	128	256
	A/Chiang Mai/105/89	< 32	1,024	128	256
	A/Chiang Mai/108/89	< 32	512	128	128
	A/Chiang Mai/120/89	64	2,048	256	256
	A/Niigata/ 102/81	256	128	64	< 32
	A/Philippines/ 2/82	< 32	256	< 32	< 32
H3N2 subtype	A/Fukuoka/C-29/85	< 32	< 32	2,048	128
	A/Sichuan/2/87	< 32	< 32	32	1,024
	A/Akita/4/88	< 32	64	256	256
	A/Niigata/102/81	256	128	64	< 32
	A/Philippines/2/82	< 32	256	< 32	< 32
	A/Fukuoka/C-29/85	< 32	< 32	2,048	128
	A/Sichuan/2/87	< 32	< 32	32	1,024
	A/Akita/4/88	< 32	64	256	256
	A/Bangkok/235/89	< 32	32	128	128
	A/Bangkok/238/89	< 32	32	128	512
	A/Bangkok/246/89	< 32	32	128	512
	A/Chiang Mai/9/89	< 32	32	128	512
	A/Chiang Mai/48/89	< 32	32	64	1,024
	A/Chiang Mai/51/89	< 32	32	64	128
	A/Chiang Mai/52/89	< 32	64	256	256
	A/Chiang Mai/80/89	32	64	256	512
	A/Chiang Mai/86/89	32	64	256	512
	A/Chiang Mai/111/89	32	< 32	32	512

strains were antigenically similar to A/Hokkaido/20/89 and 28% were similar to A/Sichuan/2-87 (i.e., any differences of HI titers were within two folds). In other words, no definite antigenic change of H3N2 subtype of the virus was observed in Thailand and in Japan in 1989.

As shown in Table 2, all of the six type B isolates were antigenically similar (i.e., any difference of HI titer was within two folds) to B/Yamagata/16/88 which was antigenically very different from type B viruses prevailed before 1988. Influenza epidemics in Japan in the 1989/90 season were caused by H3N2 subtype and type B viruses, and 89% of type B isolates in Japan in the 1989/90 season were antigenically similar to B/Yamagata/16/88²⁾. Therefore, definite antigenic difference of type B virus was not observed between Japan and Thailand.

Table 2 Haemagglutination inhibition reaction of type B influenza viruses isolated in Thailand in July and August, 1989

Virus	Mouse antiserum raised to :					
	B/USSR/ 100/83	B/Chiang Mai/ 5/87	B/Chiang Mai/ 45/87	B/Nagasaki/ 1/87	B/Aichi/ 5/88	B/Yamagata/ 16/88
B/USSR/100/83	<u>512</u>	16	<16	16	<16	<16
B/Chiang Mai/5/87	16	<u>512</u>	32	64	32	<16
B/Chiang Mai/45/87	16	128	<u>128</u>	128	16	<16
B/Nagasaki/1/87	128	512	128	<u>512</u>	128	<16
B/Aichi/5/88	64	512	64	128	<u>128</u>	<16
B/Yamagata/16/88	32	16	16	32	16	<u>1,024</u>
B/Bangkok/131/89	32	16	16	64	16	1,024
B/Bangkok/258/89	16	16	16	16	<16	1,024
B/Chiang Mai/26/89	16	<16	16	32	<16	512
B/Chiang Mai/36/89	<32	16	16	32	16	512
B/Chiang Mai/76/89	16	<16	16	16	16	512
B/Chiang Mai/96/89	16	16	16	16	16	512
B/Chiang Mai/117/89	16	<16	16	16	<16	512

References

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