

The Frequencies of Hepatitis B Antigen Subtypes in Various Parts of Thailand

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OBJECTIVE : To determine the prevalence of hepatitis B surface antigen (HB_sAg) subtypes in different regions of Thailand.

BACKGROUND : This is the conclusion of an investigation that was reported previously (1). The surface of the hepatitis B virus (HBV) contains at least five different antigenic determinants; the common determinant a, and two pairs of usually mutually exclusive determinants d/y and w/r. This allows for four different subtypes; two ad subtypes, adw and adr, and two ay subtypes, ayw and ayr.

In Southeast Asia, the HB_sAg subtypes detected are almost universally ad. Approximately 80% of the ad carriers had a third r determinant, while the remaining 20% carried w determinants (2). In other countries in Asia, increases in the prevalences of the r determinant are found with movement from north to south (3, 4). These observations suggested that subtype prevalence might also relate to geographic areas in Thailand.

METHODS : This study was done in collaboration with the Thai Red Cross Center, Bangkok, the Chiang Mai University Blood Bank and the Prince of Songkla University Blood Bank. Sera of blood donors were tested for the presence of HB_sAg by immunoelectroosmophoresis (IEOP). Antigen subtypes were determined by immunodiffusion (ID) using specific rabbit antisera.

RESULTS : The prevalence of HB_sAg subtypes in populations of different geographic regions in Thailand are presented in Table 1. The adr subtype was found in 80% of the total positive sera. The adw subtype was observed in 14%. There was a statistically significant difference in the prevalence of adr between the North of Thailand (Chiang Mai) and the central portion of the country. Other portions of the country had slightly higher prevalences than the central area. However, these differences were not significant.

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Table 1. The Relative Frequency of HB_s Ag Subtypes in Blood Donors of Different Geographical Areas^s of Thailand.

Region	HB _s Ag Positive Sera	HB _s Ag Subtypes					
		adr		adw		ad	
		No.	(%)	No.	(%)	No.	(%)
North ^a	39	36	(94)	3	(6)	0	(0)
East ^b	91	76	(84)	12	(13)	3	(3)
Central ^c	252	191	(76)	43	(17)	18	(7)
South ^d	45	38	(84)	4	(9)	3	(7)
Total	444	355	(80)	64	(14)	25	(6)

a North : Chiang Mai

b East : Cholburi, Trat, Chantaburi

c Central : (Excluding Bangkok), Prathum Thani, Nontaburi, Ayudhaya, Lopburi, Pichit, Rajburi, Nakorn Pathom, Samut Prakarn, Phetchaburi, Kanjanaburi, Samut Sakorn, Samut Songkram, Prachuab Kirikan

d South : Songkla, Hat Yai

Thus, there appeared to be a small but significant increase in the prevalence of adr as one moved north in Thailand; this gradient was small compared to those reported in Japan and China.

REFERENCES :

1. Snitbhan, R., Bancroft, W.H., Sringarm, S., and Scott, R.M., 1976. Antigen Subtypes in Various Parts of Thailand, SEATO Medical Research Laboratory Annual Report, 1976. pp. 68-70.
2. Snitbhan, R., Scott, R.M., Bancroft, W.H., Top, F.H., Jr. and Chiewsilp, D., 1975. Subtypes of Hepatitis B Surface Antigen in Southeast Asia. J. Inf. Dis., 131:708-711.
3. Yamashita, Y., Kurashina, S., Miyakawa, Y. and Mayumi, M., 1975. South-to-North Gradient in Distribution of the r Determinant of Hepatitis B Surface Antigen in Japan. J. Inf. Dis., 131:567.
4. Chen, D., Sung, J., 1977. Hepatitis B Virus Infections on Taiwan. N. Engl. J. Med. 297:668-669.