

**Rapid Detection of Dengue Virus Antigen and Antibody
by Counterimmunoelectrophoresis (CEP)**

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OBJECTIVE: To determine the ability of a CEP test to detect dengue antigen and antibody in human serum.

BACKGROUND: Because the manifestations of dengue hemorrhagic fever (DHF) develop very rapidly, a quick screening test for the detection of dengue antigen and antibody in patient serum would be beneficial to physicians. The use of CEP for making a diagnosis of other viral infections led to an attempt to apply the technique to dengue infections.

DESCRIPTION: A collaborative study was conducted in which sera from selected DHF patients in Children's Hospital collected and tested by virus isolation and hemagglutination inhibition tests in the Dept of Virology, SEATO Medical Research Laboratory (SMRL) were tested under code by CEP in the Dept of Pathobiology, Mahidol University. The CEP technique has been described (1). Antibody was detected using 20% suspensions of suckling mouse brain prepared at SMRL representing dengue types 1 to 4 and Japanese encephalitis virus. Dengue antigen was detected by screening with hyperimmune mouse ascitic fluid (dengue 1 and 4) and rabbit antisera (dengue 2 and 3). Few sera were tested with the anti-dengue 3 sera.

PROGRESS: Two to four sera were tested from 10 different patients with dengue infections documented by virus isolation (five cases), a four-fold rise in antibody (four cases) or a high fixed antibody titer (one case). In every patient, the first serum specimen gave a positive reaction for antibody by CEP with at least one dengue antigen, whether or not virus was isolated or antibody was detected by hemagglutination inhibition. On the other hand, antigen was detected by a reaction with dengue antibody in only three acute specimens; dengue virus was isolated from all three (Table 1). The results suggest CEP may be able to detect dengue antigen in some viremic patients but may not be specific enough for the detection of dengue antibody.

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Table 1. Detection of Dengue Antigen In Viremic Human Serum

Patient No.	Virus Isolate	CEP Reaction with Type of Antibody			
		Dengue-1	Dengue-2	Dengue-3	Dengue-4
73-9	D1	0	0	ND	0
73-17	D3	0	0	+	0
73-19	D3	0	0	ND	0
73-68	D2	0	0	ND	+
73-41	D2	+	+	ND	0

D = Dengue
 ND = Not done

REFERENCE:

1. Churdboonchart, V., Harisdangkul, V. and Bhamarapravati, N.: Countercurrent Immunoelectrophoresis for Rapid Diagnosis of Dengue Haemorrhagic Fever. *Lancet* 2:841, 1974.