

Comparative Pathophysiology of Strains of E. histolytica

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OBJECTIVE: To investigate the comparative invasive traits of strains of E. histolytica in SE Asia to determine whether differences in proteolytic enzyme activity account for some strains colonizing in the liver rather than producing the classical colonic ulceration with typical amebic dysentery.

DESCRIPTION: It is well known that hepatic amebiasis occurs in SE Asia with an apparent absence of symptomatic amebic ulceration of the colon. Several such cases have been reported in the literature from WRAIR in troops serving in Vietnam. Cultivation of amebae has been enhanced by the development of monophasic media which permit harvesting of relatively clean populations. It is intended that strains cultured from colonic lesions, amebic abscesses of the liver and from persons serving as mere carriers be comparatively studied by spectrophotometric enzyme technics.

PROGRESS: Attempts to isolate amebae from hepatic abscesses have not been successful to date, due, it is believed, to the patients having been given chemotherapeutics which reduced the viability of the amebae. Thus, studies have been confined to obtaining the essential baseline data for the axenic strain of E. histolytica maintained in this laboratory (strain HK-9).

Following washing with physiological saline, populations of amebae are determined with a hemacytometer. Parasites are then homogenized in an ice bath, centrifuged at 12,000 rpm for 10 minutes, and the supernate is used in the enzyme assay. The following enzyme activities have been measured during the report period:

Aminopeptidase:		Dipeptidase:	
Arginine	+	Glycylglycine	+
Alanine	+	Pepsin	+
Glycine	+	Hyaluronidase	±
Leucine	+	Lactate dehydrogenase	±
		Hydrolase:	
		Gelatin	-
		Casein	+
		Hemoglobin	+

SUMMARY: Invasive traits of E. histolytica are being investigated from the standpoint of proteolytic enzyme activity. An axenic strain of the amebae has been found to possess strong aminopeptidase and dipeptidase activities as well as pepsin and the ability to hydrolyze casein and hemoglobin. Hyaluronidase, lactate dehydrogenase and the hydrolysis of gelatin are very much less or absent.