Identity of HB-1 of King and *Eikenella corrodens* (Eiken) Jackson and Goodman

P. S. RILEY, H. W. TATUM, and R. E. WEAVER

Center for Disease Control, Atlanta, Georgia 30333

A comparison of the characteristics of the bacterium referred to as HB-1 of King and *Eikenella corrodens* (Eiken) Jackson and Goodman indicates that these organisms are identical.

During the past 23 years, the Special Bacteriology Unit (SBU) at the Center for Disease Control, Atlanta, Georgia, has identified over 500 strains of a gram-negative microorganism from clinical isolates submitted for additional characterization. King and Tatum (9) assigned the arbitrary designation HB-1 to these strains. In additional work King and Tatum (unpublished data) noted the "pitting" or depressed growth of colonies of this organism on blood agar. The colonies were pinpoint in size. Morphologically the cells were short, slender rods with straight, parallel sides and rounded ends.

Similar colonial and morphological observations on a group of microorganisms were made by Henriksen (3). Later, in a comprehensive study of these bacteria, Eiken (1) suggested that their characteristics were most similar to those of members of the genus *Bacteroides*. He proposed the specific epithet *corrodens* in the species name of this organism due to the pitting or corroding effect it produced on agar surfaces. Eiken (1) chose the genus *Bacteroides* because he thought that these bacteria were anaerobes. However, recent studies (4, 6) have indicated that these bacteria are not obligate anaerobes. Because of the ability of this organism to grow aerobically and because of other deviations from the characteristics exhibited by members of the genus *Bacteroides*, Jackson and Goodman (6) suggested that the placement of this organism in this genus is erroneous. They therefore proposed a new genus, *Eikenella*, for this organism. Jackson and Goodman also stated that *Eikenella corrodens* was probably the same microorganism as strains HB-1 of King. They found that strain A124/68, which had been identified by the SBU as belonging to the HB-1 group of organisms, was serologically identical to accepted *E. corrodens* strains. Therefore, we decided to compare over

500 strains of HB-1 with the type strain of *E. corrodens* to determine whether these organisms are identical.

Bacterial strains. The HB-1 strains used in this study were obtained from the stock culture collection maintained by the SBU. The type strain of *E. corrodens* (ATCC 23834, NCTC 10596) was kindly supplied by S.D. Henriksen.

Media and methods. The media preparation and the procedures used in determining biochemical characteristics have been previously described (2, 8). The oxidase reaction was tested by Kovac's method (10) with the use of a 0.5% aqueous solution of *N,N,N',N'*-tetramethyl-*p*-phenylenediamine dihydrochloride (Eastman Kodak Co., Rochester, N.Y.). Arginine dihydrolase and lysine and ornithine decarboxylase activities were detected by Moeller's method (11). The test for agglutination of HB-1 strains with antiserum prepared against *E. corrodens* NCTC 10596 was done by the method of Jackson et al. (7).

Some of the key characteristics of *E. corrodens* and the HB-1 strains are presented in Table 1. All of the organisms were catalase negative, oxidase positive, reduced nitrate to nitrite, possessed the abilities to decarboxylate ornithine and lysine, and were nonmotile. None of the bacteria either oxidized or fermented the carbohydrates which were tested. The serological relatedness of HB-1 to *E. corrodens* was shown by the agglutination of the 35 HB-1 strains tested with the *E. corrodens* antiserum.

Similarly, the sources of isolation of HB-1 (Table 2) also parallel those cited for *E. corrodens* (5, 6). Jackson and Goodman (6) suggested that these organisms are probably normal inhabitants of the mouth and upper respiratory tract. This suggestion is supported by the isolation of a large number of strains from the mouth, sputum, throat, pulmonary area, and areas of the face and neck. In

TABLE 1. *Some characteristics of HB-1 strains and Eikenella corrodens*

Test	Reaction	
	HB-1 ^a	<i>E. corrodens</i>
Catalase	—	—
Oxidase	+	+
Lysine decarboxylase	+	+
Ornithine decarboxylase ..	+	+
Indole	—	—
Urease	—	—
Nitrate reduction	+	+
Motility	—	—
Acid production from carbohydrates ^b	—	—
Agglutination ^c	+	+

^a Five hundred strains were tested.

^b The carbohydrates tested were: glucose, xylose, mannitol, lactose, sucrose, maltose, glycerol, salicin, arabinose, adonitol, dulcitol, galactose, fructose, mannose, rhamnose, trehalose, raffinose, sorbitol, inositol, cellobiose, inulin, dextrin, glycogen, erythritol, melibiose, melezitose, and starch. Incubation was at 35 °C for 7 days.

^c Thirty-five strains of HB-1 were tested against *E. corrodens* NCTC 10596 antiserum.

TABLE 2. *Sources of 549 strains of HB-1*

Source	Number of strains
Abscesses of eye, ear, nose, neck, cheek, and mouth	120
Sputum and throat	58
Lungs, pleural fluid, and pleural lesions	77
Intra-abdominal and abdominal wall lesions	112
Blood	25
Wounds of hands and feet	40
Wounds (unspecified)	32
Unspecified and miscellaneous	85

addition, intra-abdominal lesions and lesions of the abdominal wall were also major sources of this organism. This finding suggests that *E. corrodens* may be a normal inhabitant of the intestinal tract or, at least, can survive passage through the stomach into the intestine.

In view of this study, we concur with the proposition of Jackson and Goodman (6) that

the HB-1 group of organisms and *E. corrodens* are identical. No dissimilarity between the organisms was observed either morphologically, biochemically, or serologically.

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Address requests for reprints to: Dr. P. S. Riley, Bacteriology Section, Building 4-215, Center for Disease Control, Atlanta, Georgia 30333.

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