

Table 1. Results of Histological Examination of H&E Staining, ¹³C-UBT, and CLO Test

No. of patients	Methods		
	¹³ C-UBT	CLO test	H&E stain
56	-	-	-
2	-	-	+
27	+	+	+
3	+	-	+
7	+	+	-
Total: 95	37	34	32

on the H&E-stained slides (Fig. 1A). Therefore, additional Diff-Quik-stained slides were prepared of their gastric biopsies. With the Diff-Quik stain, *H. pylori* was noted as being curved or rod-shaped and became intensely violet-blue or dark blue (Fig. 1B), in contrast to other cells which had blue nuclei and pink cytoplasm, making it possible to positively identify it, and also to easily differentiate it from other bacteria. After reexamination with Diff-Quik staining, *H. pylori* was identified in 3 of 7 patient's gastric biopsies, in which *H. pylori* was not found initially with H&E staining.

DISCUSSION

Gastric morphologic features are well demonstrated in H&E sections, but *H. pylori* is difficult to identify when only a few bacteria are present, because the organisms are pale pink on H&E-stained slides, and they are often obscured by surrounding mucin, causing difficulty in the search for *H. pylori*.^{6,8,10} In this study, *H. pylori* was not found with routine H&E sections in 7 gastric specimens. On Diff-Quik-stained slides, *H. pylori* was identified in 3 of these 7 cases previously missed by H&E-stained sections. We have found the Diff-Quik stain to be more accurate and sensitive than H&E stain in the histological detection of *H. pylori*.

Diff-Quik stain is a modified Romanowsky cytological stain,¹³ traditionally used for differential staining of epithelial and reticuloendothelial cells. This method had been proven to be effective in the histological diagnosis of *H. pylori*.⁹⁻¹² On Diff-Quik-stained slides, *H. pylori* was noted to be curved or

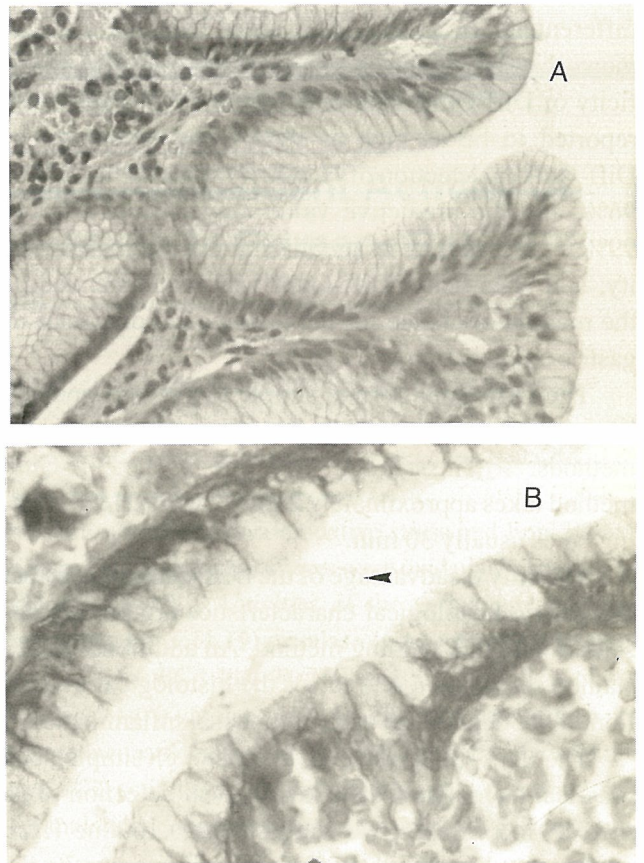


Fig. 1A. Hematoxylin and eosin staining of gastric biopsy failed to demonstrate *H. pylori* (400 x).

Fig. 1B. B. Diff-Quik staining revealing a few *H. pylori* (arrowhead) in the mucus layer of the same gastric biopsy (1000 x).

S-shaped, and it stained to violet-blue or dark blue, which may be due to the alkaline environment produced by the ammonia around *H. pylori*. The organisms are most abundant in the mucus immediately adjacent to the gastric epithelia, and their characteristic morphologic features can be easily recognized with oil immersion under Diff-Quik staining.^{9,10} The Diff-Quik stain provides a greater differential contrast between the organisms and the mucus pool, so *H. pylori* is more easily demonstrated with the Diff-Quik method than with H&E staining.¹²

Two patient's gastric biopsy specimens showed false-positive results for *H. pylori* on H&E-stained slides. The organisms lack characteristic morphologic features on H&E staining which makes it difficult to