The objective was to compare smears of clinical specimens collected and transported in the ESwab system to traditional clinical specimens collected and transported in Amies Gel Transystem for detection and differentiation of bacteria with the Gram staining method.

Microscopic examination of 240 slides from 80 specimens showed that the quality of smear preparation from the ESwab was superior to those obtained using the Amies Gel Transystem (Table 1). The ESwab slides prepared using 100 μl of Amies medium (22/80) were characterized by better details of the human cells such as epithelial cells, leucocytes, not nuclei. They also contained bacteria or fungi not present in the Amies Gel slides (29/80) (Table 2). Differences among the ESwab slides and Amies Gel slides were statistically significant, being p-value 0.004. The ESwab slides prepared using 100μl of liquid Amies medium were better than the one prepared with 50μl (Table 3). In addition, the slides prepared from the samples collected in the ESwab exhibit a very good preservation of cells. The micro-organisms which were more frequently observed in ESwab slides and not in Amies Gel slides were listed in table 2 and figure 1 illustrated some examples. Bacterial morphology (shape, colour, shine, etc.) was often more distinguishable in ESwab slides, especially in distinguishing diplococci (either gram-positive or gram-negative diplococci) (Table 2 and Figure 1) Comparing the results of fresh ESwab slides with those after 24 and 72 hour storage, no significant differences were observed (Table 1).

This study showed that the ESwab system identified more human cell and bacterial species than the traditional Amies gel system. These differences are mainly attributed to the flocked swab collection device. The flocked swab collected bacteria by capillary action whereas the traditional swab absorbed bacteria into the cotton fiber matrix. The flocked swab demonstrated a superior absorption and release (onto the slide surface) as evidenced ESwab system, allowing for easier identification of human cells in comparison to other micro-organisms. This is particularly important for the identification of a greater number of microorganisms. Organisms more readily seen in ESwab preparations were: yeasts, Gram-negative bacilli, and Gram-positive and Gram-negative diplococci.

In recent years, there has been increased emphasis placed upon the relevance of clinical microbiology. This has included preliminary evaluation of specimens to determine their value and quality for culturing pathogenic microorganisms. The Gram stain is used to classify bacteria on the basis of their forms, sizes, cellular morphologies, and Gram reactions; in a clinical microbiology laboratory, it’s an additional critical test for the rapid presumptive diagnosis of infectious agents and serves to assess the quality of clinical specimens. Interpretation of Gram-stained smears involves consideration of staining characteristics and cell size, shape, and arrangement. These characteristics may be influenced by a number of variables, including culture age, media, incubation atmosphere, staining methods, and the presence of inhibitory substances. Similar considerations apply to the interpretation of smears from clinical specimens, and additional factors including different host cell types and possible phagocytosis. Relevant is the appropriate specimen collection and transport, essential for accurate laboratory diagnosis of bacterial infections. This can be accomplished using the Copan ESwab collection and transport system. Van Horn et al have recently evaluated the ESwab system, on the basis of the CLSI acceptance criteria, concluding that it’s an acceptable swab transport system for maintaining viability of both aerobes and anaerobes. To our knowledge no studies have been performed in order to evaluate the ESwab system compliance with the Gram-stain.