Evaluation of the Beckman Antistreptolysin O and Antideoxyribonuclease B (ASO/ADB) Test Kit

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The Beckman antistreptolysin O kit agreed within one-dilution increment for 70% of the specimens tested. The antideoxyribonuclease B kit agreed within one-dilution increment for 96% of the specimens tested.

The antistreptolysin O (ASO) and antideoxyribonuclease B (ADN-B) tests are two of the most useful serological tests for the detection of group A streptococcal infections and their non-suppurative complications, acute rheumatic fever, and acute glomerulonephritis (AGN). The ASO test is the most widely used of the streptococcal serological tests, but it is not suitable for patients with AGN resulting from streptococcal pyoderma because the ASO response is poor in persons with streptococcal skin infections (1). The ADN-B test is the test of choice for patients with AGN because antibody response is good in persons with streptococcal pyoderma and its complications as well as in pharyngitis and its complications. Use of the ADN-B test has been limited by the lack of a commercial source of reagents for the test. An ADN-B test kit is now available from Beckman Instruments, Inc., and the following report is an evaluation of the Beckman ASO/ADB kit.

One hundred human serum specimens, which were referred to our laboratory for streptococcal antibody tests by State Health Departments, were tested with the Beckman ASO/ADB kit as well as by the ASO and ADN-B tests used by the Center for Disease Control (CDC). All of the tests are microtitration tests. The procedures for the CDC tests have been described previously (2, 3). The buffered diluent and human gamma globulin reference (control) serum used in the CDC ASO test were prepared in our laboratory. The WHO International ASO Standard was used to adjust the titer of the reference (control) serum. The streptolysin O was purchased from Difco Laboratories. The Beckman ASO test is essentially the same as the CDC ASO test. The deoxyribonuclease B antigen, deoxyribonucleic acid-MG substrate, human gamma globulin reference (control) serum, and the buffered diluent used in the CDC ADN-B test were also prepared in our laboratory. The CDC 0.15-log dilution scheme (3) is used in the Beckman ASO and ADB tests.

The Beckman ADN-B test is similar to the Nelson ADN-B test (4) except for the dilution scheme which is the CDC dilution scheme. The CDC ADN-B test differs from the Nelson and Beckman tests in that the CDC test uses an imidazole-buffered diluent at pH 8.0 instead of a "tris(hydroxymethyl)aminomethane"-buffered diluent at pH 7.6. Also the CDC test is incubated at 45 C for 3 h instead of 37 C for 18 h. These differences result in a more clear-cut end point for the CDC test. The end point of the CDC test is the highest serum dilution showing color, while the point of the Beckman test is the highest serum dilution in which no decolorization or "minimal" decolorization of the substrate occurs. The amount of color in the substrate is read as 1+, 2+, 3+, or 4+, with the end point being 4+ (no decolorization) or 3+ (minimal decolorization). Minimal decolorization may be interpreted differently by various individuals and a color reaction falling between a 2+ and a 3+ may sometimes be recorded as negative and at other times as positive.

The results of the comparison of the Beckman ASO test with the CDC test are presented in Table 1. The titers were the same with both tests for 20% of the specimens, whereas the remaining 80% had higher titers with the Beckman test. None of the specimens had lower titers with the Beckman test. Traditionally a variation of one-dilution increment between titers is acceptable; therefore, the Beckman ASO test appears to be satisfactory as the titers agree within one-dilution increment for 70% of the specimens tested.

Results of the comparison of the Beckman ADB test kit with the CDC ADN-B test are presented in Table 2. The same titer was obtained with both tests on 57% of the specimens and the titers varied by only one-dilution increment on another 39% of the specimens. Although the variation is not all in one direction, the majority of the variation (37 versus 6) is higher with the Beckman test. It is possible

TABLE 1. *Comparison of the Beckman ASO test with the CDC ASO test*

Titer comparison	No. of specimens
Both tests same titer	20
Beckman titer 1 dilution higher	50
Beckman titer 2 dilutions higher	27
Beckman titer 3 dilutions higher	3
Beckman titer lower	0
Total	100

TABLE 2. *Comparison of the Beckman ADB test with the CDC ADN-B test*

Titer comparison	No. of specimens
Both tests same titer	57
Beckman titer 1 dilution higher	33
Beckman titer 1 dilution lower	6
Beckman 2 dilutions higher	4
Total	100

that some of these higher titers with the Beckman test may be due to the difference in read-

ing end points between the two tests. Although we used the 4+ or 3+ reading as the end point for the Beckman test, some of our 3+ readings may have been read as 2+ by someone else which would drop the titer by one-dilution increment. The Beckman ADB test kit appears to be satisfactory as the titers agree within one-dilution increment for 96% of the specimens tested. The kit meets a long standing need for a commercial source of the ADN-B test.

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