

## Sera from Patients with High Titers of Antibody to Streptolysin O React with Listeriolysin

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**Sera of patients with suspected rheumatic fever and elevated titers of antibody to streptolysin O were examined by an immunoblotting technique. All but two serum samples, which yielded relatively low titers, bound to a 60-kilodalton protein in the supernatant from a culture of *Listeria monocytogenes*, which presumably represents the listeriolysin.**

A hemolysin produced by *Listeria monocytogenes*, called listeriolysin, is a 60-kilodalton (kDa) protein which shares still other properties with the classical sulfhydryl-activated cytolysins (1). The various members of this family of cytolysins produced by quite distinct bacterial groups, such as streptococci, pneumococci, and listeria, as well as clostridia (4), differ in some aspects, for example pH activity or DNA sequence homology (P. Cossart, *Infection*, in press); however, they show considerable structural similarities. The antigenic compositions of streptolysin O and listeriolysin are so closely related that a rabbit polyclonal antiserum against a highly purified streptolysin O cross-reacted with listeriolysin produced by *L. monocytogenes* (1), as well as by other *Listeria* spp. (3).

These biological findings raise the question whether the serologic test for the determination of anti-streptolysin O titers of humans specifically proves infection with hemolytic streptococci.

We selected several sera from patients with suspected acute rheumatic fever showing elevated titers (Table 1) of anti-streptolysin O determined by a routine neutralization test (Behringwerke, Marburg, Federal Republic of Germany). These sera were examined by immunoblotting against a sodium dodecyl sulfate-gel preparation of concentrated culture filtrates of *L. monocytogenes* sv 1/2a (NCTC 7973).

Sera with high amounts of anti-streptolysin O (Table 1) also reacted with the 60-kDa protein of *L. monocytogenes* (Fig. 1), which presumably represents the listeriolysin.

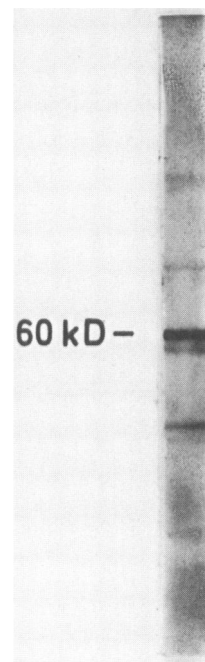


FIG. 1. Patient serum with elevated titer of anti-streptolysin O antibody (1,600 IU/ml) immunoblotted against a sodium dodecyl sulfate-gel preparation of a concentrated culture filtrate of *L. monocytogenes* sv 1/2a (NCTC 7973). A strong reaction with a protein band in the range of 60 kDa corresponding to the listeriolysin is seen.

TABLE 1. Reaction of sera with elevated anti-streptolysin O antibody titers with the 60-kDa protein of *L. monocytogenes* culture filtrate (listeriolysin) in immunoblotting

No. of serum samples tested	Antibody titer (IU/ml)	No. of samples with indicated reaction with 60-kDa <i>L. monocytogenes</i> protein in immunoblotting	
		Positive	Negative
3	400	2	1
12	600	11	1
4	800	4	
1	1,600	1	

Consequently, it is doubtful that really high titers of anti-streptolysin O are indicative in any case of poststreptococcal disease. Elevated titers should be much more prudently interpreted. Possibly, a second anti-streptococcal antibody could provide further evidence of previous streptococcal infection and exclude the possibility that the antibodies directed against streptolysin O are in fact induced by a listerial or pneumococcal (2) infection.

### LITERATURE CITED

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