NOTES

Factor Analysis of *Leptospira biflexa* Saprophytic Serogroup Pulpudeva

MARINA CINCO AND IRENE STEFANELLI

Institute of Microbiology, University of Trieste, Trieste, Italy

Major and minor antigens of four serovars of the Pulpudeva serogroup of *Leptospira biflexa* were defined by factor analysis. One major factor, P14, was found to characterize the group. Another (P13) was found only in two serovars.

To contribute to a continuing program to define agglutinating factors of serogroups of saprophytic leptospirae, we present here the results of studies on the four serovars *pulpudeva*, *fons*, *canela*, *jequitiaia* of serogroup Pulpudeva as well as on strain Percedol₂ of serogroup CAU, which was agglutinated, at a significant level, by serum anti-Canela.

MATERIALS AND METHODS

Strains. Strain Bulgaria 6, belonging to serovar *pulpudeva*, was isolated from fresh water and classified by Ivanov and Babudieri (3). Strains Fons, belonging to serovar *fons*, was isolated by Babudieri (1) and classified by Nardelli and Babudieri (4). Strains Jequitiaia and Canela, belonging to serovars *jequitiaia* and *canela*, respectively, were isolated and classified by I. Silva (submitted for publication).

Immune sera and serological tests. The preparation of immune sera and the serological procedures used were previously described (2). Cultures used to prepare antisera were 10 to 12 days old.

RESULTS

Factor analysis results are shown in Table 1.

This factor analysis revealed a major antigen, named P14, which is common to all the serovars and consequently is typical of the Pulpudeva

serogroup. Antigen P13 was only found on serovars *pulpudeva* and *fons*, thus explaining their marked antigenic affinity. Major antigens P11, P15, P12, and P16 were found to be specific for serovars *pulpudeva*, *fons*, *canela*, and *jequitiaia*, respectively.

The minor antigens reported in the table complete the antigenic map of each serovar. P103 and P104 are hapten-like factors on strains Canela and Jequitiaia. Serovars *pulpudeva* or *fons* can be considered the most representative of the group.

REPRINT REQUESTS

Address reprint requests to: Dr. Marina Cinco, Institute of Microbiology, University of Trieste, Trieste, Italy.

LITERATURE CITED

1. Babudieri, B., and I. Archetti. 1947. Le leptospire acquicole e la loro costituzione antigenica. Rend. Ist. Super. Sanita Ital. Ed. 10:962.
2. Cinco, M., and R. Dougan. 1975. Factor analysis of saprophytic serogroup Semarang and Andamana of *Leptospira biflexa*. Int. J. Syst. Bacteriol. 25:138-142.
3. Ivanov, I., and B. Babudieri. 1971. Isolation and systematic study of the first Bulgarian strains of saprophytic leptospiras. Ann. Ist. Super. Sanita 7:91-94.
4. Nardelli, M. G., and B. Babudieri. 1972. Ann. Ist. Super. Sanita 8:114.

TABLE 1. Antigenic map of serovars of Pulpudeva serogroup of *Leptospira biflexa*

Serovar	Reference strain	Main antigens	Minor antigens
<i>pulpudeva</i>	Bulgaria 6	P11, —, P13, P14, —, —,	P101, —, P103, P104, P105, P106, ..
<i>fons</i>	Fons	—, —, P13, P14, P15, —,	—, P102, —, P104, P105, —, ..
<i>canela</i>	Canela	—, P12, —, P14, —, —,	P101, P102, P103, ^a —, P105, P106, b ^b
<i>jequitiaia</i>	Jequitiaia	—, —, —, P14, —, P16,	P101, P102, —, P104, ^a —, P106, ..

^a Hapten-like factors.

^b b is a factor referred to the strain Percedol 2 belonging to the CAU serogroup.