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THE SEROLOGICAL AND CULTURAL PREVALENCE  
IN SHEEP OF LEPTOSPIRAL INFECTION IN THE  
NORTH ISLAND OF NEW ZEALAND

A THESIS PRESENTED IN PARTIAL FULFILMENT [30%]  
OF THE REQUIREMENTS FOR THE DEGREE OF  
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## ABSTRACT

A survey of sheep from the North Island of New Zealand was conducted for leptospiral infection. The results of the serological examination showed 20.5 percent of the sheep had titres ( $\geq 1:48$ ) to Hebdomadis serogroup, 3.8 percent to serovar *pomona*, 2.6 percent to serovar *tarassovi*, 2.3 percent to serovar *copenhageni* and 2.7 percent to serovar *ballum*. No titres of 1:48 or greater were detected to serovar *australis*. It was shown that a minimum dilution of 1:24 resulted in many non-specific or cross-reaction. A minimum dilution of 1:48 was more accurate for detecting the serological prevalence of agglutinins to leptospire in ovine sera. In the cultural survey, serovar *hardjo* was isolated from three animals in one group of sheep. It was considered that the Hebdomadis titres were more likely to represent previous infection with *hardjo* than with *balcanica*.

Based on the serological and cultural examinations, from the general survey and a study farm, a pattern of infection was recorded. The serological prevalence and the geometric mean titre (GMT) of different age groups of sheep from different farms and the lack of success on obtaining further isolates of *hardjo* indicated that sheep are not the maintenance host for this serovar in New Zealand. Although infection of sheep by serovar *hardjo* is not uncommon, it is a sporadic occurrence and endemic infection is unlikely to occur.

Preliminary investigations on the use of radioimmunoassay in detecting leptospire or leptospiral antigens in urine are presented.

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