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ATTEMPTED HAEMAGGLUTINATION WITH AVIAN INFECTIOUS BRONCHITIS VIRUS

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SUMMARY

It is confirmed that IBV will not agglutinate erythrocytes from birds or eutherian mammals in a simple test incubated at room temperature.

Introduction

Electron micrographs have revealed a superficial similarity between infectious bronchitis virus (IBV) and members of the Myxovirus group (Berry *et al.* 1964). Although haemagglutination is a characteristic of most myxoviruses (Andrewes 1964), Hofstad (1945) found that IBV would not agglutinate chicken red blood cells. Similarly, Corbo and Cunningham (1959) recorded a negative result with chicken, canine, feline, equine, ovine, bovine and human type O erythrocytes. Red cells from the chicken, but not from the other five species, were agglutinated by trypsin-modified IBV.

An Australian strain of IBV, (N4454), was tested against red cells from 16 species of animals. This virus was isolated from Queensland chickens in 1961 (Newton and Simmons 1963) and is considered to be a strain of IBV because it produces dwarfing in chick embryos and cross-neutralizes with recognized strains of IBV (C. H. Cunningham, personal communication 1964).

Materials and Methods

Red cells were collected from a turkey, a muscovy duck, a goose, a 3-month-old chicken, a 6-month-old chicken, a sheep, a steer, a pig, a horse, a guinea-pig, a rabbit, a laboratory rat, a laboratory mouse, a cat, a pigeon (*Columba livia*), an echidna (*Tachyglossus aculeatus*) and a bearded dragon (*Amphibolurus barbatus barbatus*). Cardiac or peripheral venous blood was collected into a syringe containing an equal volume of Alsever's solution and after storage for 2 or 3 days the erythrocytes were washed four times and diluted to a 0·5% suspension in 0·85% saline ready for use.

Ten-day-old chick embryos were inoculated allantoically with IBV N4454. Allantoic fluid harvested from the infected embryos 48 hr later had a virus titre of 10^5ELD_{50}/ml. Allantoic fluid from uninfected chick embryos of the same age was also collected. After centrifugation at 2,000 r.p.m. for 10 min, serial two-fold dilutions from 1:2 to 1:32 in 0·85% saline were made from both the normal and the infected allantoic fluid.

Each red cell type was tested against the five dilutions of infected and normal allantoic fluid and a saline control, using 0·1 ml volumes of test material and erythrocyte suspension in disposable haemagglutination trays (Linbro Chemical Co., Model 240 U-CS clear). Tests were incubated at room temperature and read every 15 min for 3 hr, without moving the trays.

To determine if all red cell types could be agglutinated, they were tested against ten-fold dilutions of phytohaemagglutinin from 1:10 to 1:10,000.

Results and Conclusion

None of the cell types were agglutinated by normal or IBV-containing allantoic fluid. Erythrocytes from the turkey, chickens, steer, pig, rabbit, echidna and bearded dragon were agglutinated to a titre of 1:10 by phytohaemagglutinin after 2 hours' incubation. Those from the goose, pigeon, duck, cat, rat, sheep, guinea-pig and mouse were agglutinated to a titre of 1:100, and the horse to 1:1,000.

These results confirm previous reports that IBV will not agglutinate erythrocytes from birds or eutherian mammals, in a simple test incubated at room temperature. Red cells from a monotreme and a reptile were also not agglutinated.

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