

Preliminary Data from Study of Some Biological Qualities of three Strains of Newcastle Virus, Isolated From Pigeons

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Abstract

Three virus of illness of new castle with origin from pigeons are isolated from sick pigeon during the years 2012-2013 in our country. Those viral strains are study in laboratory for some of their biological quality as are: Agglutination of erythrocytes of the horse, medium time of the death of the embryo where has result that viruses that we are mentioned doesn't agglutinate erythrocytes of the horse and have a medium time of the death of the embryo beginning from 68 hour, since on 98 hour. Beside those qualities are studies and thermo stability of agglutinins, thermo stability which, is presented in summary table is the same for all strains. Also we have study and pathogen in chickens. This pathogenitet is zero, so, strains of pigeons aren't pathogen for poultry, even though have flow from them according [3]. A biological quality studied from our side is and index of cerebral pathogen of those strains . The received data from our side tell that those strains have different index, but all of them, these strains, have index pathogens in limit from 1-1.75 where according [12] enter in group of mezzo gen virus. Also we have studied and level of anti troops that produce these strains in poultry 3 weeks , and the evolution of strains. Also we have study and Tetris of anti troops in pigeons we have isolated corresponding strains. More details, the mentioned data are present in below table. Study of this qualities is made partial in our country and partial in Institution Friedrich- Loffler-Germany.

Keywords: pigeons, newcastle disease virus, illness, agglutinin.

1. Introduction

Newcastle disease virus (NDV) is one of the most important infectious agents in veterinary medicine and the causative agent of Newcastle disease (ND), which affects commercial poultry and causes important economical losses [2]. The virus belongs to the family *Paramyxoviridae*, subfamily *Paramyxovirinae*, in the genus *Avulavirus* [9]. Due to variations in virulence and host susceptibility, the symptoms of NDV infection in domestic species (chicken, turkey, goose, duck, and pigeon) range from unapparent to severe; infection causes respiratory, enteric, and nervous system disease, leading to high mortality rates [2]. Antigenic and genetic diversity with in the NDV isolates is recognized [1]. Different genotypes of NDV circulate throughout the world, albeit they are all members of a unique avian paramyxovirus group 1 (APMV-1) serotype. Molecular characterization is of paramount

importance for the epidemiology studies required in the development and adaptation of control strategies [8]. Vaccination of commercially reared birds is the best way to reduce losses resulting from NDV infection [11].

Since 1984, a worldwide panzootic of paramyxovirus 1 (PMV-1) Newcastle disease virus (NDV) infection has been reported in pigeons, causing a frequently fatal disease primarily associated with neurological signs [3]. Pigeon paramyxovirus type 1 (PPMV-1) viruses are variant strains of NDV associated with infections of pigeons and have a world wide distribution [3]. The pigeon was a free-range bird found dull and lethargic with neurological signs. Variant strains of APMV-1 associated with infections of pigeons, known as pigeon paramyxovirus type 1 (PPMV-1), sometimes behave as lentogenic viruses. Although these viruses are virulent for pigeons, they show a low ICPI in chickens, despite the presence of an F protein cleavage-site motif that is generally

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associated with virulent viruses [10]. Most pigeon paramyxovirus-1 (PPMV-1) isolates differ from other APMV-1 isolates by having unique monoclonal antibody binding profiles [5, 6, 7].

2. Materials and Methods

A three NDV isolates, from pigeons that was negative in hemagglutination inhibition tests for avian influenza virus and avian adenoviruses (VEN-611) was obtained from a field during 2012 and 2013 year with not high mortality rates and showing ND clinical signs. Virus isolation was performed using standard virus isolation procedures and embryonated eggs [4]. The pathogenic evaluation of the isolate was carried out using standard assay methods to determine the intracerebral pathogenicity index (ICPI) in 1-day-old chicks [5]. Briefly, 1-day-old chicks were inoculated intracerebrally with 0.1 ml of a 1:10 dilution of infective allantoic fluid. Chicks were monitored during an 8-day observation period and scored as normal, sick or paralyzed, and dead. Total scores were determined, and the mean daily score was calculated to obtain the ICPI. Mean death time (MDT) determinations were performed as previously reported using embryonated chicken eggs [4]. Also we have determined and evolution. Also we have determined and Tetris of virus in embryo, and the Tetris of agglutinins in the experimentally infected poultry of the age 3 weeks. Isolation of the strains is realized in the embryo eggs received from flock of poultry clean from new castle. Determination of the test of ICPI is made after the re cultivation of the strains in embryo

eggs SPF (Friedrich- Loeffler Institute) strains are appointed with numbers 1, 2 and 3. In study of biological qualities of the isolated strains we have used and horse erythrocytes [12]. Despite this, we have notice and titers of antihemagglutinins of the infective pigeons from this strains, getting blood from corresponding poultry. The used test in those studies has been the test of Ha and HAP using standard serums of the references center as Weibridge etc.

3. Results and Discussion

As we mentioned and above, isolation of the strains is made to us initially in the allantoic fluid of the embryonated eggs which are from flock of poultry without story (all of their life) of the new castle illness and also never unvaccinated anti troops counter the new castle. We emphasize that in Germany, re cultivation of those strains is made in the embryonated eggs (SPF Specific Pathogen Free), where are separated and is determined and ICPI (Index of Intra cerebral Pathogen). Some of the above data are compare with results of the strains clone-30 (vaccine strain). Medium time of the death of the embryo is determined according the known formula as below, where between which we judge for pathogenic qualities of corresponding strains. During the multiplication of the strains like in our laboratory, also and in the Institute Friedrich- Loeffler, these strains are cultivated very good as in the embryonated eggs that comes from flock of poultry which are un infectious and unvaccinated, also and in the embryo of SPF (Institute Friedrich-Loeffler) Germany.

$$MDT = \frac{(\text{No. dea at x hour}) \times (\text{x hour}) + (\text{No. dea at Y hour}) \times (\text{Y hour}) \text{ etc.}}{\text{Total number dead}}$$

Received data, from below study are presented in following table:

Table 1. Data for some biologic quality of the strain of the pigeon that we have isolated

No. of strain	HA/ horse's erythrocytes	Medium time of death of the embryo	Thermo stability haemagglutini n	Evolution	Pathogen in chicken	Titers of virus in embryo	Titers of anti troops to the poultry 3 weeks	ICPI
1	-	64 hours	20 minutes	Medium	-	1:128	9.0	1.68
2	-	58 hours	20 minutes	Low	-	1:128	10.25	1.188
3	-	98 hours	20 minutes	Low	-	1:128	6	1.37
Clone	+	75	5 minutes	Medium	-	1:1024		

Note: Titers of antihemoagglutinins in pigeons with clinical signs, from which we have isolated corresponding strains, are: 1:128, 1:256; and 1: 128 respectively.

As is presented and in above table, isolated and studies strains from our side present different biological quality. Their common quality, thing that make different and from the Clone (vaccine strain) is that they doesn't react with horse's erythrocyte, while that according the table result that agglutinin vaccine clone clearly horse's erythrocytes. During the determination of the medium time of the death of embryos, which is also teller for pathogenic qualities of the strains, we notice that not all of the strains that are isolated from our side, have quality to die the embryo at the same time. So to the first strain, the time of death of embryo is more shorter, quality this of a high pathogen, which is in connection and with ICPI (Index of cerebral pathogen) in birds 24 hour, where is presented and in table this index is one of the highest in compare with 2 other strains. Despite this during the control of the embryos, after the death we noticed that embryo have and signs as edema more emphasize hemorrhage in report with other embryo. According the data of [12], in this case we have to make with strains with mortality index 1 until on 1.75. From table result also and is interesting the fact that and strain No.2, has a short time of the death of embryo. If we compare with strain No.1, this time is more shorter. Those strain, also and the above strain, which include in period from 48 hour, so 2-3 days, are strain of the same type mesogenic. These strains according [12] have a mortality from 1-1.75. We emphasize also that this strain, despite of this fact, that speaks about a previous boundary strain, separate the point view of pathogen, his ICPI is 1.188. Naturally that this index is lower than the previous strainer, however is in level above 0.7. These two strains, if we will see carefully the table, we will see that in the case of the infection of the poultry 3 weeks give high level of anti troops, which achieve 9.0 and 10.25 log 2. And to this quality we notice a difference, where strain one, although has index of high pathogen, hasn't very immunity power, in direction of production of anti troops, thing that naturally is understandable that they are pathogen, but haven't many antigenic quality. Strain no.3 of the pigeon, has many different from point view of medium time of the death of embryo. Medium time of it is 98 hour, so it's a long time, in report with two

strains, but also and more longer as clone vaccine which is adapted in embryo. This quality, for our idea is in connection and with level of anti troops that produce during the infection in poultry, where level of producing anti troops is so lower, in report with two other strains, level 6.0 log₂. Index of pathogen in birds is 24 hour of this strain is 1.37, so into the index 1-1.75, determined according [12] as mezzo gen strain. The thing that is common characteristic also for three of the studied strains of the pigeons from our side, is the fact the thermo stability of hemoagglutininave is the same 20 minutes. Naturally is more higher from this of vaccine clone, where the thermo stability of hemoagglutininave is lower 5 minutes. We emphasize that all of the strains of pigeons, despite that they comes from strains of new castle of poultry [3], are apathogen for poultries and in experimental proves. An another different quality of this strains is and evolution, their ability to defense agglutinating quality and after extension of incubation. As is presented and in table, in strain No. 1 this phenomena is medium, and similar with this vaccine (clone), while that this quality, to both of other strains, this quality is lower.

4. Conclusions

Based in the above data we conclude that strains of isolated pigeons from our side, present a different biological quality, beginning from medium time of the death of the embryo, ICPI etc quality those that make different from each other. Despite this fact, according the data of literature, these strains appear characteristic biologic quality for mesogenic strains, thing that in frame of the studies of epidemiologic situation of the Newcastle illness shouldn't underestimate. Also these data think that are a great help, in the fight of this infection to the pigeon. These data suggest that usage of vaccinates with strain with low antigen quality, aren't many efficiency.

5. References

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