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MOLECULAR DETECTION OF AVIAN INFECTIOUS BRONCHITIS VIRUS FROM GI-23 LINE BY RT-QPCR METHOD

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The avian infectious bronchitis virus (IBV, *infectious bronchitis virus*) causes severe disease in chickens and is widespread worldwide. IBV belongs to the *Gammacoronavirus genus*, *Coronaviridae* family, and has a wide genetic/antigenic diversity, mainly in the spike (S) gene/glycoprotein. This diversity allows classifying IBV into 6 phylogenetic types (GI to GVI) and several lineages. Studies have demonstrated the wide occurrence of GI, especially of the GI-1 and GI-11 strains, in Brazil. However, a new strain (GI-23, associated with worrying outbreaks in Europe and Asia) has recently emerged and is rapidly spreading in poultry production flocks in the country. Detection of IBV and specific strains has been performed by molecular methods, including PCR and sequencing. This study aimed to validate an RT-qPCR method for the specific detection of the GI-23 strain of IBV. The methodology consisted of obtaining 66 samples from birds (tracheas, kidneys, etc.) positive for IBV, 21 of which were from the GI-23 lineage (determined by sequencing the S gene). The samples were subjected to RNA extraction and RT-qPCR tests using three validated reagent kits (generic *Newgene* IBV, GI-1 and GI-11) and another in the testing phase (GI-23), according to the instructions of the manufacturer (Simbios Biotecnologia, Cachoeirinha, Brazil). The results showed that 63 (95.5%) samples were positive and 3 (4.5%) negative in the generic IBV test. GI-23-specific RT-qPCR was positive for 43 of the 63 positives (68.3%), including the 21 with GI-23 sequencing results. Among the other samples, two (3.2%) were positive for GI-1, two (3.2%) for GI-11 (2; 3.2%) and 16 (25.4%) were negative for the 3 tests (GI-1, GI-11 and GI-23). This study demonstrates the effective validation of the RT-qPCR method for specific detection of GI-23. Frequency data for this lineage (68.3%) also point to its wide dissemination in the country's lots. In conclusion, the GI-23 specific detection RT-qPCR method can be effectively used to monitor the spread of this strain in poultry farms in Brazil.

Keywords: IBV; poultry; coronavirus; molecular diagnosis.