THE VIRUCIDAL EFFECT OF DECAMETHOXIN IN VITRO AGAINST CORONAVIRUS OF INFECTIOUS BRONCHITIS

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Abstract

Aims — to study the cytotoxic effect of decamethoxin on cell cultures and evaluate the antiviral activity of decamethoxin against coronavirus (CoV) infectious bronchitis virus (IBV) and the possibility of its use for the prevention of CoV infection.

Materials and methods. Modern and classical methods of virology research were used in this study: determination of the cytotoxic effect of decamethoxin on the monolayer of cell cultures in vitro; cultivation, accumulation and determination of the infectious titer of the virus by cytopathic action on the monolayer of cell cultures; evaluation of virucidal action of the drug in vitro; determination of the inhibitory activity of the drug by the reduction of the infectious virus titer in cell culture, suspension method, Romanowsky-Giemsa stain. IBV was used as a test virus. The virucidal effects of decamethoxin have been studied in cell cultures of chick embryo fibroblasts and Syrian hamster kidney (BHK-21). The results were recorded by light microscopy.

Results. It was found that the infectious titer of IBV was reduced by 2–5 lg in comparison with the control when the virus was treated with an isotonic decamethoxin solution in concentrations of 200–1000 μg / ml. It was shown that in a dose of 200 μg / ml the agent completely inactivated 100–1000 infectious doses of the virus with a duration of irradiation of 30 minutes without manifestations of cytotoxic effects in serial dilutions.

Conclusion. The revealed virucidal properties of decamethoxin in pharmacopoeial permissible concentrations against a prototype strain of the Coronaviridae family allow to recommend its use as a disinfectant for non-specific prevention of coronavirus infection in adults.

Key words: quaternary ammonium compounds, decamethoxin, virucidal action, coronavirus, chicken infectious bronchitis virus IBV.

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