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ULTRAVIOLET-C INACTIVATION OF *PORCINE PARVOVIRUS* (PPV), *SWINE VESICULAR DISEASE VIRUS* (SVDV) AND *SENECAVIRUS A* (SVA) IN LIQUID PLASMA

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Introduction

Spray dried plasma (SDP) is a functional protein source included in pig feeds due to its beneficial effects on post-weaning performance and survival. The manufacturing process of SDP involves several safety features, but additional safety steps can be investigated. Ultraviolet at 254 nm wavelength (UV-C) is a non-thermal process that disrupts cellular transcription and replication. The aim of this study was to check the effectiveness of the UV-C irradiation on survival of PPV, SVDV and SVA inoculated in bovine plasma.

Material & Methods

A total of 24 L of bovine plasma were used for each virus. This amount was divided into three different sub-batches of 8 L each. At time zero, 15 mL samples were obtained as negative control before virus inoculation. A positive control sample was collected 5 min after inoculation. Plasma was recirculated under turbulent flow at 4000 L/h in a closed system of a SP1 device (SurePure Operation AG, Zug, Switzerland). Each sub-batch was consecutively irradiated at 750, 1500, 3000, 6000 and 9000 J/L and sequential samples were taken at each UV-C dose. Infectivity was analysed in target cell cultures, using the microtiter assay procedure. All negative samples in the titration assay were subjected to three blind passages. Results: Four-fold viral titer reduction (4D) was reached at 5699 J/L for SVDV, 3108 J/L for SVA, and 2708 J/L for PPV.

Discussion and conclusions

These results point out that the UV-C treatment is useful to reduce the load of non-enveloped viruses in liquid plasma. Therefore, this procedure can be used as an intermediate additional safety feature for the manufacturing process of SDP.