The reliable and rapid diagnosis of infectious animal diseases presents an exceptionally important aspect when considering their control and prevention. The paper describes the comparative evaluation of two rapid isothermal amplification methods for diagnosis of African swine fever (ASF). The robustness of loop-mediated isothermal amplification (LAMP) and the cross-priming amplification (CPA) were compared using samples obtained from ASF confirmed animals. Both assays were evaluated in order to define their diagnostic capabilities in terms of ASF diagnosis and reproducibility of the results. Investigations showed no cross-reactivity for other pig pathogens and no significant differences in the specificity of both assays. The sensitivity of LAMP reached 90%, while that of CPA was 70%. In conclusion, both methods are suitable for implementation in preliminary ASF diagnosis but further improvements are required to enhance their diagnostic sensitivity.

Key words: African swine fever, loop-mediated isothermal amplification, cross-priming amplification, comparison, diagnostic evaluation

Introduction

African swine fever (ASF) is a notifiable fatal viral disease of pigs and wild boars with significant veterinary and economic impact (Sánchez-Vizcaíno et al. 2015). Given the current critical situation according to the increasing ASFV occurrence in Central Europe, and recent emergence in China and Belgium, the disease constantly possesses a serious threat of worldwide spreading (Śmietanka et al. 2016, Zhou et al. 2018). The currently applicable preventive methods include strict sanitary measures, but reliable diagnosis of ASF is the other crucial point (World Organisation for Animal Health (OIE) Terrestrial Manual 2012). Some of OIE-approved diagnostic methods are laborious or require employment of sophisticated equipment that excludes their application by the veterinary practitioners or hunters. An isothermal nucleic acid amplification technology has been developed in order to simplify the assay workflow (Craw and Balachandran 2012). Recently, an alternative of cross-priming amplification (CPA) and loop-mediated isothermal amplifi-