

## 論 文 要 旨

**Validation of the loop-mediated isothermal amplification method  
for rapid and sensitive detection of *Ureaplasma* species  
in respiratory tracts of preterm infants**

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**Introduction**

A simple and rapid diagnosis of *Ureaplasma* spp. is required for the choice of the appropriate antibiotic. However, an ideal detection method has not been available. This study examined the efficacy of the loop-mediated isothermal amplification (LAMP) assay, which provides rapid and sensitive results, to detect *Ureaplasma* spp. in respiratory tract samples of preterm infants.

**Methods**

The study included preterm infants born before 32 weeks of gestation admitted Kagoshima City Hospital from June 2018 to March 2020. Nasopharyngeal swabs and/or tracheal aspirates were obtained in the first seven postnatal days. One hundred sixty-seven nasopharyngeal swabs and 101 tracheal aspirates were analyzed by LAMP, culture, and quantitative real-time polymerase chain reaction.

**Results**

All 167 infants had a median (range) gestational age of 28.7 weeks (22.3–30.9) and birthweight 1030g (322–1828). One hundred sixty-seven nasopharyngeal swabs and 101 tracheal aspirates were obtained. In the results of nasopharyngeal swabs, the sensitivity and specificity of LAMP were 73.9% (17/23) and 97.2% (140/144), whereas those of quantitative real-time polymerase chain reaction were 73.9% (17/23) and 95.8% (138/144), compared to culture. In the results of tracheal aspirates, the sensitivity and specificity of LAMP were 89.5% (17/19) and 92.7% (76/82), whereas those of quantitative real-time polymerase chain reaction were 89.5% (17/19) and 93.9% (77/82), compared to culture.

**Conclusions**

The LAMP assay showed similar sensitivity and specificity with quantitative real-time polymerase chain reaction in the respiratory tracts of preterm infants including extremely preterm infants during the immediate postnatal period. Therefore, the LAMP is a practical alternative for the early detection so that appropriate antibiotics can be administered for preventing BPD.