

Accepted Manuscript

The development and application of a duplex reverse transcription loop-mediated isothermal amplification assay combined with a lateral flow dipstick method for *Macrobrachium rosenbergii* nodavirus and extra small virus isolated in China

Feng Lin, Li Liu, Gui-jie Hao, Peng-chen Sheng, Zheng Cao, Yang Zhou, Peng Lv, Ting Xu, Jinyu Shen, KePing Chen

PII: S0890-8508(18)30009-4

DOI: [10.1016/j.mcp.2018.05.001](https://doi.org/10.1016/j.mcp.2018.05.001)

Reference: YMCPR 1343

To appear in: *Molecular and Cellular Probes*

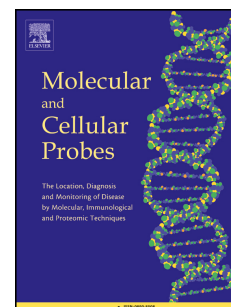
Received Date: 14 January 2018

Revised Date: 3 May 2018

Accepted Date: 21 May 2018

Please cite this article as: Lin F, Liu L, Hao G-j, Sheng P-c, Cao Z, Zhou Y, Lv P, Xu T, Shen J, Chen K, The development and application of a duplex reverse transcription loop-mediated isothermal amplification assay combined with a lateral flow dipstick method for *Macrobrachium rosenbergii* nodavirus and extra small virus isolated in China, *Molecular and Cellular Probes* (2018), doi: 10.1016/j.mcp.2018.05.001.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



The development and application of a duplex reverse transcription loop-mediated isothermal amplification assay combined with a lateral flow dipstick method for *Macrobrachium rosenbergii* nodavirus and extra small virus isolated in China

Feng Lin ^{a, b, c}, Li Liu ^c, Gui-jie Hao ^c, Peng-chen Sheng ^c, Zheng Cao ^c, Yang Zhou ^b,
Peng Lv ^b, Ting Xu ^d, Jinyu Shen ^c, KePing Chen ^{a, b *}

^a School of Food and Biological Engineering, Jiangsu University, Zhenjiang 212013, China

^b Institute of Life Sciences, Jiangsu University, Zhenjiang 212013, China

^c Key Laboratory of Healthy Freshwater Aquaculture, Ministry of Agriculture, Zhejiang Institute of Freshwater Fisheries, Huzhou 313001, China

^d School of Life Sciences, Shaoxing University, Shaoxing 312000, China

* **Corresponding author**, E-mail address: kpchen@ujs.edu.cn (Keping Chen).

Abstract: White tail disease (WTD), a major disease prevailing in the larval stage of *Macrobrachium rosenbergii*, caused by *Macrobrachium rosenbergii* nodavirus (MrNV) associated with extra small virus (XSV), led to the economic loss of shrimp industry in China. In order to establish a convenient, sensitive and selective molecular diagnostic method to detect MrNV and XSV for the Chinese shrimp (MrNV/XSV-chin), a reverse transcription loop-mediated isothermal amplification (RT-LAMP) assay combined with a lateral flow dipstick (LFD) method were developed. A set of four specific primers and a labeled probe were designed according to the six conserved gene sequence regions encoding for the MrNV capsid protein CP43 and the XSV capsid protein CP17. The detection of MrNV and XSV simultaneously by RT-LAMP was performed at 61°C in a single reaction for 60 min followed by hybridization with an FITC-labeled probe for 5 min and visualized by LFD. The RT-LAMP-LFD assay had a sensitivity of approximately 100-fold higher than conventional PCR. In addition, the assay could detect MrNV/XSV-chin from limited amount of RNA extracts as low as 1.0 pg extracted from *Macrobrachium rosenbergii*. This assay was simple to use, required little instrumentation, and exhibited excellent specificity for the MrNV/XSV-chin compared with other shrimp viruses. In conclusion, a convenient, sensitive and selective practical molecular diagnostic method was developed with the potential for diagnosis and prevention of WTD.

Key words: *Macrobrachium rosenbergii* nodavirus; extra small virus; duplex Reverse Transcription; loop-mediated isothermal amplification; lateral flow dipstick

1. Introduction

Macrobrachium rosenbergii is an important economic crustacean that is farmed in

Download English Version:

<https://daneshyari.com/en/article/8478703>

Download Persian Version:

<https://daneshyari.com/article/8478703>

[Daneshyari.com](https://daneshyari.com)