

Molecular characterization of MHCII α gene from *Rana dybowskii* and its response to LPS

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Abstract

Immune tissue associated with the major histocompatibility complex (MHC) is widely present in vertebrates highly polymorphic gene cluster. However, available published data about how amphibians MHCII genes react to pathogen infections are very few. The present study reports MHCII molecule in *Rana dybowskii*, and its differential expression in immunologically relevant tissues post-infection with lipopolysaccharide (LPS). The results showed that cDNA sequence of MHCII α contained 1047bp nucleotides encoding putative 348 amino acids. The phylogenetic analysis exhibited its evolutionary conservation within amphibians and formed a different clade with vertebrates. Moreover, quantitative reverse transcription PCR analyses demonstrated that the MHCII gene was transcribed in the seven tested tissues, and analysis of immunologically relevant tissues of MHCII gene from the infected *Rana dybowskii* exhibited differential transcriptional activities. The expression of MHCII in the heart, liver, spleen, lung, kidneys, skin and muscular reached peak levels at 72, 24, 48, 12, 12, 12 and 72h post-infection(hpi), respectively. These findings indicate that MHCII is an indispensable part of the immune system. This is one of the first studies to investigate MHCII α in *Rana dybowskii* and can provide the foundation for further study of the immune function of MHC molecules in anti-infection.

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Primer name	Primer sequence(5'-3')	Size(bp)
Primers for cloning		
MHCI- α -F1	CGGGTACCCGGTCTCGATAAAGGAT	988
MHCI- α -R1	TCAGGCTTTCGGGTG	
MHCI- α -F2	ATGGAGCTGTCTGCTCA	
MHCI- α -R2	CGCTCGAGCGGTCCGTACTCTATGTAATTCT	580
Primers for qRT-PCR		
MHCI-q-F	GTCTCATCTGGCTCGTCC	227
MHCI-q-R	ATCCGTACTGGTGATACCC	
β -actin-F	AAGAATGAGGGCTGGAACA	176
β -actin-R	GTCCGTGACATCAAGGAGAAGC	

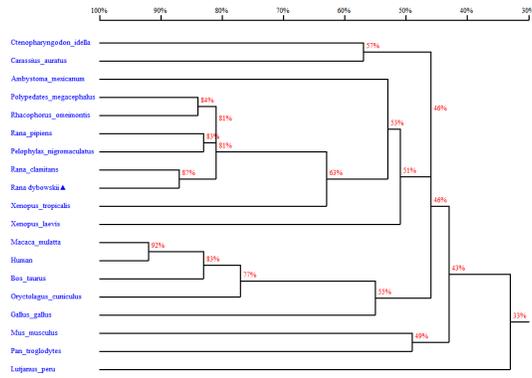


Figure 1

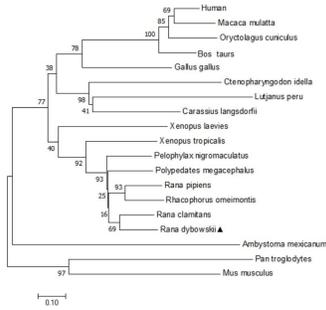


Figure 2