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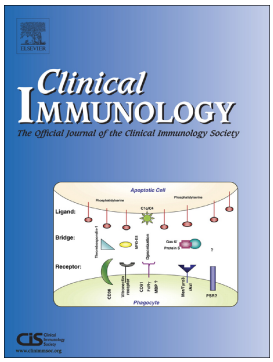

An optimized whole blood assay measuring expression and activity of NLRP3, NLRC4 and AIM2 inflammasomes

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An optimized whole blood assay measuring expression and activity of NLRP3, NLRC4 and AIM2 inflammasomes

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Abstract

The proinflammatory protease caspase-1 plays pivotal roles in central pathways of innate immunity, thereby contributing to pathogen clearance. Beside its physiological role, dysregulated activity of caspase-1 is known to contribute to an increasing number of diseases. In this study we optimized and validated a low-volume human whole blood assay facilitating the measurement of caspase-1 activation and inflammasome-related gene expression upon stimulation of the NLRP3, NLRC4 or AIM2 inflammasome. Using the NLRP3 inflammasome specific inhibitor MCC950 we were able to measure the activity of canonical or alternative NLRP3 pathways, AIM2 and NLRC4 inflammasomes in whole blood. Based on our data we assume a superposition of NLRP3 and NLRC4 inflammasome activities in human whole blood following stimulation with *S. typhimurium*. The optimized whole blood assay may be suitable for diagnostic and research purposes for pediatric patients who can only donate small amounts of blood.

Keywords

procaspase-1, inflammasome, whole blood assay, NLRP3, AIM2, NLRC4

Conflicts of interest

The authors declare no conflict of interest.

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