



UvA-DARE (Digital Academic Repository)

Early NK cell activation as a result of MPL and QS-21 combination controls the adjuvant effect induced by the human Adjuvant System AS01

Coccia, M.; Herve, C.; Collignon, C.; Van Deun, K.; van den Berg, R.A.; Van Mechelen, I.; Smilde, A.K.; Morel, S.; Garcon, N.; van der Most, R.; Van Mechelen, M.; Didierlaurent, A.M.

DOI

[10.1111/imm.12405](https://doi.org/10.1111/imm.12405)

Publication date

2014

Document Version

Final published version

Published in

Immunology

[Link to publication](#)

Citation for published version (APA):

Coccia, M., Herve, C., Collignon, C., Van Deun, K., van den Berg, R. A., Van Mechelen, I., Smilde, A. K., Morel, S., Garcon, N., van der Most, R., Van Mechelen, M., & Didierlaurent, A. M. (2014). Early NK cell activation as a result of MPL and QS-21 combination controls the adjuvant effect induced by the human Adjuvant System AS01. *Immunology*, 143(S2), 61. <https://doi.org/10.1111/imm.12405>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (<https://dare.uva.nl>)

Immunology

The Journal of cells, molecules, systems and technologies

British Society for
immunology 

IMMUNOLOGY

ABSTRACTS

Oral Abstracts

BSI 2014

Can Immunological Advances Enhance Vaccine Design?

contains both monophosphoryl-lipid A (MPL) and the saponin QS-21 and is used in the RTS,S malaria candidate vaccine. AS01 induces a transient activation of innate immunity, leading to increased number of activated antigen-presenting dendritic cells, but the impact of combining MPL and QS-21 on innate immune activation has not been investigated. We combined immunological and data analysis tools to identify the mechanism by which AS01 activates innate immunity, leading to improved adjuvant capability. Using a novel statistical framework for mRNA expression analysis, we unravelled the combinatorial effect of AS01 components and identified an emergent early IFN γ signature elicited by AS01. The IFN γ response was mediated by innate cells, including NK cells that secreted IFN γ in the draining lymph nodes (dLN) as early as 2 h after injection of mice with AS01. Depletion strategies showed that NK cells were essential for the development of T cell immunity. Interestingly, a similar activation was observed in the dLN of AS01-injected macaques as well as in the blood of individuals receiving AS01-adjuvanted vaccine.

Our multidisciplinary, cross-species analysis of AS01 mode of action shows that combination of immunostimulants resulted in the induction of novel pathways associated with improved vaccine response. It also highlights a key role for early NK cell activation in AS01 adjuvant effect, providing novel hypotheses on the contribution of this adjuvant in the protection conferred by the AS01-adjuvanted vaccine in humans.

459

Early NK cell activation as a result of MPL and QS-21 combination controls the adjuvant effect induced by the human Adjuvant System AS01

M. Coccia^{*}, C. Herve^{*}, C. Collignon^{*}, K. Van Deun[†], R. A. van den Berg^{*}, I. Van Mechelen[†], A. K. Smilde[‡], S. Morel^{*}, N. Garcon^{*}, R. van der Most^{*}, M. Van Mechelen^{*} & A. M. Didierlaurent^{*}

^{*}GlaxoSmithKline Vaccines, Brussels, Belgium, [†]Katholieke Universiteit Leuven, Leuven, Belgium, [‡]Universiteit van Amsterdam, Amsterdam, The Netherlands

Combining immunostimulants in adjuvants can improve the quality of the immune response to vaccines. The Adjuvant System AS01