PA-049 SOLUBLE HLA-G LEVEL EFFECT ON GMZ2 SPECIFIC IgG PRODUCTION AFTER IMMUNISATION

Odilon Nouatin,[1] Ulysse Ateba Ngoa,[1] Jean Claude Dejon,[1] Jean R Edoa,[1] Andreas Homoet,[2] Julie Englhon Engelhon,[2] Marguerite Massinga-Louembe,[1] Meral Esen,[2] Michael Theisen,[3] Kim Lee Sim,[4] Thomas Richie,[4] Adrian Jf Luty,[5] Kabirou Moutairou,[6] Stephen Hoffman,[7] Peter Kremsner,[2] Bertrand Lell,[1] Benjamin Mordmüller,[2] Ayola Adegnika[1]. *[1]CERMEL, Gabon; [2]ITM Tübingen, Germany; [3]Statens Serum Institut, Denmark; [4]Sanaria Inc., United States of America; [5]IRD, Benin; [6]National University of Benin, Benin; [7]Sanaria Inc., United States of America*

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Background Malaria is a major public health problem particularly in Africa. Despite the relatively good immunogenicity profile of the vaccine candidates in naive population, most of them are poorly immunogenic in malaria endemic population.

This could be due to an induction of various immune regulatory mechanisms. It has recently been shown that high levels of an immune regulatory molecule sHLA-G in infants increased the risk of malaria, and question may arise as to whether it can equally impair vaccine induced immune response. In this study we have assessed the correlation between sHLA-G and the immune response induced by GMZ2 a blood stage malaria vaccine candidate.

Methods It was an observational study nested within a phase Ib trial aiming to assess the safety, immunogenicity and efficacy of GMZ2 adjuvanted with CAF01, on fifty Gabonese adults life-long exposed to *Plasmodium* spp. Three doses of either the vaccine candidate or Rabies vaccine were injected at Day 0, Day 28, Day 56. Peripheral blood sample was collected at Day 0 and Day 7 after the first vaccine administration as well as 28 days after the third vaccine administration (Day 84). sHLA-G level was measured by ELISA on Day 0 and Day 7, and the anti GMZ2, anti MSP3, Glurp IgG concentrations were determined by ELISA on Day 0, 7 and 84. Vaccine efficacy was assessed using *PfSPZ* Challenge.

Results sHLA-G level was significantly increased from Day 0 to Day 7 ($p=0.004$) and correlated with a significant decrease of anti-GMZ2 total IgG ($r=-0.35$, $p=0.04$). No correlation was found between sHLAG and anti MSP3, Glurp IgG production. Interestingly, individuals who did not develop malaria after the challenge had a lower level of sHLA-G at baseline ($p=0.03$).

Conclusions Vaccination with GMZ2 induces an increase of sHLA-G level resulting in a decrease of vaccine immunogenicity. This could have an implication for the design of malaria vaccine candidates in semi-immune individuals.