Novel neutralizing antibody assays for recombinant human hookworm \(Na\)-GST-1 vaccine

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Abstract

Necator Americanus, a human hookworm causes approximately 85% of the global hookworm infections. Hookworm ingest hemoglobin containing erythrocytes. Hemoglobin is further digested to Heme and the globular hookworm infections. Hookworm ingest hemoglobin which is currently under clinical development. Enzyme inhibitor and generates toxic reactive oxygen species which is detoxify Heme. Necator Americanus, sites, the ligand binding or Heme detoxification site (H-site) and the detoxify Heme.

Methods

Na-GST-1 Hookworm Vaccine

Necator americanus glutathione S-transferase-1 (Na-GST-1) is a 24-kDa protein from \(N\). americanus. The recombinant polypeptide Na-GST-1 was expressed in Pichia pastoris vaccine was stored at \(4\)\(^{\circ}\)C containing erythrocytes. Hemoglobin is further digested to Heme and the global hookworm infections. Hookworm ingest hemoglobin which is currently under clinical development.

Results

Figure 2. Na-GST-1 reduces iron-release from Hematin\(^{\dagger}\)

Oxidizer like H2O2 causes hematin degradation leading to the release of free Iron. Ascorbic Acid (reducing reagent) and Ferrozine (Iron detection reagent) are used to detect the iron released from Hematin. Neutralization of Enzymatic Activity

\[\text{Figure 3. Neutralization of Hematin}\(^{\dagger}\) detoxification activity of Na-GST-1 by mouse polyclonal IgG.\]

\[\text{Figure 4. Neutralization of Hematin}\(^{\dagger}\) detoxification activity of Na-GST-1 by mouse polyclonal IgG.}\]

Figure 5. Neutralization of Hematin detoxification activity of Anti Na-GST-1 specific Human IgG

\[\text{Figure 5. Neutralization of Hematin detoxification activity of Anti Na-GST-1 specific Human IgG.}\]

Conclusions

In-vitro assay showed that Na-GST-1 can prevent the release of free iron from Hematin.

Acknowledgments

This project is supported by the Sabin Vaccine Institute through funding from the Bill and Melinda Gates Foundation and the Dutch Government. The authors have no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the material subjects or discussions discussed in this Poster apart from those disclosed.

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