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Expression of human neonatal Fc-receptor (FcRn) in *Escherichia coli*: A novel strategy

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Neonatal Fc-receptor plays an important role in maintaining the serum half-life of antibodies. This unique function had been explored in various studies in order to improve the pharmacokinetics of human immunoglobulin G (hIgG) in vivo. FcRn is composed of a α -chain which non-covalently associates with a β -chain, named β -2-microglobulin (β 2m). Studies have shown that the α -chain contains several interaction sites to the Fc segment of IgG, while β 2m is important for the proper folding of FcRn. Genetic expression of FcRn has been conducted in many eukaryotic tissues, ranging from mammalian tissue to yeast, and also prokaryotic organism. Study designed by Andersen *et al.* had shown the production of functional FcRn in bacteria. However, protein refolding step is required to ensure the native activity of FcRn. In this study, we have demonstrated a novel expression strategy by using bacterial system, which produces the functional α -chain of FcRn. Expression vector that carries the cDNA of α -chain, was transformed into expression host, Rosetta-Gami 2. The bacterial culture was grown at 22°C for 16 hours after induction in a modify growth medium. The α -chain was expressed as soluble supernatant after sonication and centrifugation. The results of ELISA have indicated the native affinity of the α -chain towards hIgG and also retained its unique pH-dependent binding to the antibody. Our study proposed that the binding of FcRn to IgG may remain active in the absence of its β -chain. Further study will be conducted to confirm this finding.

Biography

Woei Kean Ng currently is a 3rd year PhD student in University Sains Malaysia. His research mainly focuses on the study of FcRn in the application of diagnostic. He has also conducted study on development of diagnostic test to identify the antibiotic resistance bacteria in tertiary hospital.

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