

---

## Determination of physicochemical properties of human IgG light chain constant domain by immunoinformatic

Fatemeh Hajjighasemi <sup>\*a</sup>, Soheila Rohani <sup>a</sup>, Fatemeh Sefid <sup>b</sup>

<sup>a</sup>Department of Immunology, Faculty of Medicine, Shahed University, Tehran, Iran.

<sup>b</sup>Department of Biology, Faculty of Basic Science, Shahed University, Tehran, Iran.

\*fatimahajjighasemi@gmail.com

**Abstract:** Immunoglobulins (Igs) are serum proteins have a major role in defense against microorganisms. Igs consist of light and heavy chains. Light chains have one variable (VL) and one constant (CL) domain. IgG is most Ig exists in human serum combats pathogens [1]. Serum IgG extent is related to intensity of some diseases like infections and immunodeficiencies [2]. So IgG has a great diagnostic worth [3]. Exploration of physicochemical properties of human IgG would be useful in definition of IgG immunogenic epitopes. In this study physicochemical properties of human IgG CL domain were identified by immunoinformatic.

Second and third structure of reference human IgG light chain was defined by Phyre 2 software and PDB database respectively. Physicochemical properties of human IgG CL domain including flexibility, accessibility, hydrophilicity and beta turns were specified by IEDB software.

Most accessible human IgG light chains areas are situated in 150 - 200 and most flexible regions are located in 125 - 135 and 150 - 190 amino acids sequence of CL domain. Most B-turn sheets and hydrophilic regions of human IgG light chains are sited in 150 - 175 and 150 - 170 amino acids sequence of CL domain respectively.

This study showed most accessible, flexible, hydrophilic and B-turn sheets of human IgG light chains are overlapped and located in 125 - 200 amino acids sequence of CL domain. This region may provide best immunogenic epitopes and so be useful for planning most specific reagents to optimize current IgG diagnostic tests.

**Keywords:** Human IgG, Immunoinformatic, physicochemical

### References:

- [1] Abbas AK, Litchman AH, Pilla S. Cellular and Molecular immunology, 6nd edn. 2007. W B Sanders.
- [2] Wong LP, AbuBakar S, Chinna K. Community knowledge, health beliefs, practices and experiences related to dengue Fever and its association with IgG seropositivity. PLOS Neglected Tropical Diseases. 2014;8 (5): e2789.
- [3] Bai J, Li H, Shi J, Xu J, Li X, Cao W, et al. Biochemical index and immunological function in the peripheral blood of patients with idiopathic pulmonary alveolar proteinosis. Biomedical Reports. 2013;1 (3): 405-409.