



Therapy for Viruses Immune Support (IST-12)

- **What are they?**

Dendritic cells are a type of antigen presenting cells (APC) that play an important role in the adaptive immune system. Activated DCs by specific antigens can be used as vaccines, activating both T- lymphocytes (CTLs) and antibody producing cells (B-cells). These DCs can be re-administered back to the patient, stimulating an immune response against that specific antigen.

- **Role as fighting viruses**

There have been numerous clinical trials concerning the efficiency of activated DCs in viral infections. DCs have been successfully loaded with chemically inactivated HIV (NCT02766049). They have also been loaded with recombinant HCV antigens. The objective was that DC vaccination will induce specific immune response and reduce viral load in patients with chronic HCV-infection (NCT03119025). DC vaccines can have numerous physiological actions: Firstly, produced antibodies can block virus-cell interaction, thus blocking viral entry; Secondly, antibodies tag viruses and help their recognition by phagocytes or complement proteins leading to their subsequent destruction; Thirdly, cytotoxic T-cells (CTLs) can attack and kill virus-infected cells and lastly, long term memory cells can provide immune protection.

- **RGCC's DCs**

RGCCs laboratories use patients' isolated monocytes as a source for the in vitro production of DCs. DCs are then pulsed with synthesized peptides designed specifically to mount an immune response against viral proteins. These peptides are selected carefully so as to activate both T-lymphocytes (CTLs) as well as antibody producing cells aiming at long term memory cells and overall protection. Viral vaccine is composed of 3 doses, with 2 doses activating CTLs and one dose activating antibody producing cells.

- **Administration**

After pulsing with viral antigens, DCs need to be administered in an effective way. From the total of 6ml, 1 ml is administered subcutaneously and the other 5ml are administered intra-venous. This way there is a greater chance for CTLs and B-cell activation.

- **Adverse events**

Dendritic cell therapy is generally a very safe procedure. Adverse events are mild and include flu-like symptoms (fever) and injection site reaction (skin rash). (Zhang et al. 2015)(Boudewijns et al. 2016).

- **Contraindications**

Dendritic cell therapy is not recommended in the following cases:

- Chemo and radioterapy – Suppression of the immune systems
- Recent Blood transfusions
- Active autoimmune diseases
- Pregnancy