

Viscum Album Therapy

3.1. Introduction

Viscum album (European mistletoe) has been used for medical indications for several centuries. Hildegard von Bingen (1098-1179) gives several indications for the (oral) use of *Viscum album*. In the beginning of the 20th century, it was Rudolf Steiner (1861-1925), who suggested the *parenteral* use of *Viscum album* in the treatment of cancer patients. Therefore, since 1923, *Viscum album* has been used and initially studied in the field of oncology. In the last decade of the 20th century, *Viscum album*, as an immunomodulator, has also been clinically studied in chronic viral infections like in HIV/AIDS, Human Papilloma Virus (HPV) infection in women with cervix dysplasia, and hepatitis C (HCV) infection.[i],[ii],[iii]

It is well-known that the extracts of European mistletoe (*Viscum album* Loranthaceae) cause a variety of biological activities such as cytokine production from immune-related cells,1,2,3 enhancement of natural killer (NK) cell activity,1,[iv],[v],[vi] and immunoadjuvant activity.[vii],[viii],[ix]

3.2. *Viscum album* and immunomodulation

The immunomodulating and anti-cancer activities of *Viscum* are caused by biologically active components like lectins (glucoproteins), viscotoxins, alkaloids and polysaccharides.5,[x],[xi],[xii] Especially the mistletoe lectines (ML) cause significant activities and therefore have been studied most intensively.[xiii],[xiv],[xv] Three main groups of lectins have been identified: lectin I (ML-I) has an affinity for D-galactose (D-Gal), lectin III (ML-III) for N-acetyl-galactoseamine (GalNAc), and lectin II (ML-II) for both sugars. Among the three lectins, ML-I is most well studied, so that its anti-tumor and immunomodulating activities are well recognized. The modes of action of the various components of *Viscum album* have been well summarized and discussed by Fischer.[xvi]

Von Laue has documented that during parenteral *Viscum album* therapy, there is a positive correlation between the total mistletoe lectin content and the production of anti-ML-I-IgG antibodies.[xvii] Subclasses of anti-ML-I-IgG antibodies can indicate whether a *Viscum album* therapy leads to an activation of Th-1 lymphocytes (through production of IgG1 or/and eventually IgG3) or to an activation of Th-2 lymphocytes (through production of IgG2 or/and IgG4).17

Usually, through immune stimulation and immunomodulation with *Viscum album*, a Th-1 response is initiated. Through this pathway, a cytokine-dependent *cytotoxicity* is provoked, which plays an important role in the natural defence mechanisms against tumor cells. A Th-2 response provokes the production of IL-4, IL-5, IL-10, etc., and thus, B cells increase their production of IgG2 and IgG4. The cytotoxicity thus created, is (tumor) antigen-specific, and exhibits a direct lysis of tumor cells.

Therefore, monitoring of IgG subclasses during a *Viscum album* therapy is a very meaningful way to monitor and optimize therapeutic interventions.

In addition, in the early phases of a *Viscum album* therapy, eosinophilia is considered to be a positive phenomenon, and positively related to a partial or complete response in cancer patients.

3.3. *Viscum album* and circadian rhythms

In general, growing older makes the circadian rhythm of the core temperature and its amplitude more and more rigid and flat.

In cancer patients, the circadian rhythm of the core temperature and its amplitude have become significantly hampered. Usually, the core temperature is lowered by about 0.6°C. In addition, the amplitude is flattened. The delicate interaction between the core and peripheral temperature to maintain a stable core temperature is also inhibited.[xviii] Therefore, one could say that the cancer patient grows old more rapidly. Parenteral administration of *Viscum album* will usually improve these functions significantly.[xix] In other words, *Viscum album* rejuvenates the above described circadian rhythm, and thus the warmth organization.

Thus, in the *Cologne Model*, *Viscum album* is used to improve effectively the T-cell function and the functioning of the warmth organization of the patient.

Recently, pre-clinical and clinical studies have been conducted with the Korean mistletoe (*Viscum coloratum*). Compared to the European mistletoe, very similar activities of the Korean mistletoe in animal models have been documented.[xx]

More Informations:

Mistletoe Use in Cancer Therapy By Katherine Aparicio

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