

CORIOLUS VERSICOLOR – INNOVATION IN PREVENTION OF ONCOGYNECOLOGICAL DISEASES, ESPECIALLY HPV

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Summary:

Coriolus-MRL is a nutrient adjuvant, which contains biomass of the fungus *Coriolus versicolor* with immunostimulating components – beta-glucanes and proteoglucanes. Researches have been carried out in recent years, establishing the effects of the fungus in the prevention of HPV patients from developing cervical cancer as well as the prevention against other cancer-causing viruses.

Immunostimulating nutrition is a new concept, representing the potential for modulating the activities of the immune system through intake of specific nutrients and strengthening the capability of the organism for self-defence and prevention.

Fungotherapy (treatment with medicinal mushrooms) is an important part of immunostimulating nutrition. The biological activity of the fungi is connected with improvement in cardiac activity, strengthening of the immune system, alleviation of allergic symptoms, normalized levels of blood sugar and detoxication of the organism. One of the most important effects is the prevention from cancer-inducing viruses. Such viruses are the Human Herpesvirus type 8 (HHV-8), Human papillomavirus (HPV), Epstein-Barr virus (EBV) and hepatitis B virus (HBV) (3).

The relation between HPV and the development of cervical cancer has been proved. It has been established that 80 % of all women get infected with HPV within 4 years after they start their sexual life, and that 90 % of all cases of cervical cancer are caused by HPV. Thirteen out of 100 subtypes of HPV are considered high-risk for the development of cervical cancer. Studies by many authors point out a relation between HPV and prostate cancer (7).

The anti-HPV vaccines introduced in the 1990s are effective against 2 to 4 of the high-risk subtypes HPV and are effective only in HPV-uninfected women. Surgical treatment of HPV lesions is not possible in the early stages and in many cases there is a risk of recurrence of the process.

Coriolus versicolor is a fungus whose biomass acts as a non-specific immunomodulator and is a suitable adjuvant in cancer patients for the strengthening of the immune system, especially after chemotherapy and radiotherapy (1).

This medicinal mushroom is widely distributed in the woodlands of North America, Asia and Europe. It is parasitic on deciduous and coniferous tree species or saprophytic on tree stumps. It consists of mycelium (made up of hyphae) and fruit bodies, where spores for reproduction are formed.

The immunostimulating effect of *Coriolus versicolor* is due to the beta-glucanes and proteoglucanes it contains. Beta-glucanes are polysaccharides, consisting only of glucose residues, and proteoglucanes are proteins connected with polysaccharide chains. They have the selective ability to cause apoptosis (programmed cell death) in cancer cells without damaging the healthy ones (4). **Fig.1**

Back in the 1970s two proteoglucanes, typical of this fungus species were isolated – polysaccharide K (PSK) and polysaccharopeptide (PSP). A number of studies prove the activity of these compounds in stimulating the effect of natural killer cells and the increase of the number of T-lymphocytes.

The activity of enzymes preventing from oxidizing stress, inhibiting cellular reproduction and contributing for the detoxication of the organism was established. Immunostimulating effect is strengthened by the content of some secondary metabolites (lectines, terpenoids, chelates).

A specially created strain (CV-OH1), a result of 15 years of work of scientists from both Mycology Research Laboratories Ltd–United Kingdom and Gourmet Mushrooms Inc., California, USA is used for the industrial cultivation of *Coriolus versicolor*). The mycelium of this sort has very high bioactivity and vitality and is genetically identical with the initial parent forms. The cultivation of the fungus and the whole process of tablet production ensure preservation of Beta-glucanes, proteoglucanes and enzymes as major immunostimulating factors. The required microbiological control avoids the presence of impurities and accumulation of pesticides and heavy metals in the biomass. The nutrient adjuvant Coriolus-MRL is not an extract; it contains mycelium and young fruit bodies of the fungus. In this way the synergistic effect of all biologically active compounds in the biomass is ensured.

Over 350 scientific and clinical studies have been published since 1971, when polysaccharide K was discovered. The activity of *Coriolus versicolor* in various diseases, especially oncological diseases was shown. Recent studies have established its positive effect in HPV patients.

Dr. Silva Couto from the Institute of Oncology- Coimbra, Portugal carried out clinical trial on the effect of *Coriolus versicolor* in HPV patients with cervical lesions (2). 39 patients with low-grade squamous intraepithelial lesions (LSIL), 22 of them with high-risk subtype HPV, were included. Two groups were formed: control group, without any treatment, and a group with an intake of 6 tablets (3g) *Coriolus-MRL* per day in the course of 1 year. All patients were submitted to colposcopy, biopsy and HPV tipification in the beginning and at the end of the study. Results showed normal cervical cytology in 13 (72.5%) of the 18 women taking *Coriolus-MRL*. In the control group the percentage was 47.5%. Of the 10 high-risk patients taking *Coriolus-MRL*, 9 moved from HPV(+) to HPV(-) status. Only one of the 12 women in the control group was HPV(-) at the end of the study. Dr.Couto has reported regression of dysplasia and reversion from HPV(+) to HPV(-) status in high-risk patients with LSIL. In patients with high-grade squamous intraepithelial lesions (HSIL), who were still high-risk HPV(+) after conization, Dr Couto also reports positive effect.

Dr. Jean Monro – Medical Director in Breakspear Hospital, UK applied *Coriolus-MRL* in 36 patients with Chronic Fatigue Syndrome and immune deficiency manifested by irregular differentiation of T-lymphocytes, low level of natural killer cells, active viruses and high titres of antibodies, IgG or IgM to a range of viruses (6). Patients took *Coriolus-MRL* – 6 tablets of 500mg for 15 days, and 3 tablets of 500 mg for 45 days. At the end of the study a doubling of the levels of natural killer cells and decreases in viral loads was established. On the basis of these results and previous studies on the influence of folic acid in HPV control, Dr. Monro recommends a scheme of intake of *Coriolus-MRL* and folic acid for 8 weeks with the aim of preventing HPV patients from developing cervical cancer and reversing the process of dysplasia. During the treatment period patients are given 3g *Coriolus-MRL* daily as well as 300mg folic acid daily for 1 week and 10mg folic acid daily for 7 weeks. Control of microbiological and immune markers is recommended in order to evaluate the synergistic effect of *Coriolus-MRL* and folic acid (5).

Dr. L. J. Standish from the School of Naturopathic Medicine at Bastyr University has received funding from the Cancer Treatment Research Foundation (CTRF) to perform a placebo-controlled clinical trial looking at the effects of *Coriolus versicolor* supplementation on the immune system, quality of life and fatigue of women with breast cancer after completing radiation therapy.

