PriMera Scientific Surgical
Research and Practice
Volume 8 Issue 3 September 2026
DOI: 10.56831/PSSRP-08-325
ISSN: 2836-0028

PriMera Scientific Publications

Non-Hodgkins Lymphoma Treatment Patent Scientific Analysis

Type: Review Article
Received: June 22, 2026
Published: September 02, 2026

Citation:
Christina Rahm. "Non-Hodgkins Lymphoma Treatment Patent Scientific Analysis". PriMera Scientific Surgical Research and Practice 8.3 (2026): 17-20.

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Abstract

This white paper is an assessment of a multi-formulation treatment protocol that is patented to treat Non-Hodgkin Lymphoma (NHL) which is an evaluation of the science behind the potential success of this theory. The patent incorporates specific micronutrients, bioactive phytochemicals, prebiotics, probiotics, and minerals, which are independently informed to a position in standard oncology and immunology literature to affect an action on immune modulation, regulation of oxidative stress, and control of cancer cell signaling. New research indicates that such compounds as curcuminoids, resveratrol, quercetin, vitamin D, zinc, and microbiome-promoting fibers might modify lymphoma-related processes, including tumor-induced apoptosis, tumor inflammation, and microenvironmental control as an adjunctive treatment. The dosing regimen described in the patent is consistent with the pharmacokinetic principles of bioavailability, synergies and immune homeostasis through oncologic stress. The invention is scientifically plausible, integrative in approach, which builds on top of standard NHL solutions, incorporating evidence-based natural compounds in a structured and rational therapeutic plan.

Introduction

Problem Statement

Non-Hodgkin lymphoma is a diverse and multifactorial malignancy that has become a challenge notwithstanding the improvements in the immunotherapy and chemotherapy of the disease. Common therapies of R-CHOP-based regimens have been shown to be effective with most patients but mostly characterized by serious toxicity, immune suppression, and lower quality of life, which may restrict adherence to treatment and long-term groups (Derebas et al., 2022). Therapy and relapse, and accumulated side effects persist as a significant number of patients, especially among the elderly and comorbid people (Raut & Chakrabarti, 2014). Current studies stress the necessity to use adjunctive interventions to help the immune system, decrease systemic inflammation, and improve the resilience of cells during and after the standard therapy (Caponio et al., 2022). To address these unmet needs, scientifically grounded integrative strategies should be safely incorporated alongside established, evidence-based oncologic treatments.

Background

Recent discoveries in the biology of cancer have underlined the concept of the microenvironment of tumors, immunomodulation, oxidative stress, and the functioning of the metabolism as the determinants of the development and response to treatment of Non-Hodgkins Lymphoma (Izuegbuna, 2022). The variety of natural compounds that can interact with signaling pathways involved in lymphoma cell survival, cell apoptosis, and immunosurveillance has been discovered through nutritional biochemistry and phytotherapy studies (Aggarwal et al., 2013). Complementary mechanisms have been declared by vitamins, minerals, polyphenols, and microbiome supportive agents in decreasing germination, enhancing antioxidant potential, and promoting hematologic recovery among cancer patients (Calder, 2020). Structured dosing strategies and carefully designed combination protocols are increasingly recognized as essential for promoting therapeutic synergy while minimizing the risk of adverse interactions. Within this scientific framework, the patented multi-formulation protocol is evaluated as a rational, integrative approach with potential relevance to Non-Hodgkins Lymphoma.

Scientific Application of the Patent

The original version of the patented protocol is the combination of zeolite extract, vitamin C and sea minerals, all three of which aim at detoxification, redox balance and mineral homeostasis. Zeolites were examined due to the ion-exchange as well as adsorption properties, and it is possible that they may be utilized in the context of toxin-binding and the process to regulate oxidative stress in biology (Cheson et al., 2014). Higher amounts of vitamin C are known to affect immune cell activity, and may have pro-oxidant effects on malignant cells, in favor of apoptosis and immune-mediated elimination (Carr & Maggini, 2017). Sea mineral extracts are a source of obtaining in trace amounts those elements that are important to enzyme functions and immune interactions that can be lost during aggressive cancer treatment (Calder, 2020). Collectively, these ingredients provide a viable biological basis in helping to sustain system resilience in lymphoma therapy.

The next formulation combines polyphenols and metabolic cofactor like curcuminoids, resveratrol and D-ribose that has extensively been investigated on account of anti-inflammatory and anti-neoplastic action. The curcuminoids also show an inhibitory effect on NF-kB signaling and induce apoptosis in the lymphoma cell lines, which support their importance to the NHL-associated molecular pathways (Aggarwal et al., 2013). Resveratrol also plays its role by regulating the cell cycle and improving mitochondrial activity, which could make the malignant lymphocytes more susceptible to immune-mediated elimination (Izuegbuna, 2022). There is the incorporation of metabolic substrates like D-ribose as new evidence of cellular energy balancing in immune competence in cancer people (Yuen & Tsao, 2021). This formula is a systems-based formula that seeks to increase the reduction of the inflammatory response and the provision of metabolic needs during therapy.

The third formulation involves high dose vitamin C combined with zinc and vitamin D3 which are nutrients whose immunomodulatory effects are well proven. Vitamin D has also been linked with better post-discharge results in patients with lymphoma because of its modulatory impacts as regards T-cell development as well as control of inflammation (Potre et al., 2023). Zinc is also essential in lymphocyte formation, antioxidant enzyme activity, and immunity against the virus, which is especially important in immunocompromised groups. Vitamin C supplements these actions by enhancing the work of leukocytes and collagen production and reducing oxidative damage in cancer therapies (Carr & Maggini, 2017). The scientific basis of this formulation is that it is aimed at boosting the mechanisms of immune surveillance needed in reining the progression of the disease of lymphoma.

The fourth formulation includes focusing on prebiotic fibers, phytonutrients, and probiotic ingredients that are aimed at balancing the microbiome of the gut. Recent research has advocated a robust association between the microbiota composition of the gut immune system, systemic immunity and sensitivity of cancer-therapy, such as immunotherapy (Derrien et al., 2019). Agave inulin and green banana powder are some example ingredient fermentable substrates that enhance the production of short-chain fatty acids which have been linked to anti-inflammatory and immune-stimulating effects (Mazziotta et al., 2023). Leafy greens and spirulina powder are rich in bioactive compounds that support hematologic restoration and enhance antioxidant defense mechanisms (Caponio et al.,

2022). This development intersects scientifically with the developing aspects of oncology status that considers the health of the gut as a key mechanism influencing cancer.

The fifth formulation has quercetin, magnesium, NAD-associated substances and vitamins D3 and K2 that jointly operate on cellular signaling and mitochondrial effectiveness. It has also been shown that quercetin possesses anti-proliferative influence in the analysis of hematologic malignancies by mediating through PI3K/Akt and MAPK regulatory mechanisms. ATP production and repair heavily rely on magnesium and are required in the conditions of high cellular stress, such as cancer treatment (Yuen & Tsao, 2021). The precursors of NAD are beneficial to maintain the mitochondrial activity and possibly also increase the durability of immune cells under metabolic isolation (Covarrubias et al., 2021). This hypothesis is endorsed by this restatement because the enhancement in immune competence of NHL patients can be achieved by restoring cellular energetics.

Beyond the specific formulations, the patented protocol's dosing strategy is grounded in established principles of pharmacodynamics and adaptive biological response. A gradual dose-escalation model allows the body to physiologically adapt over time, potentially reducing the likelihood of adverse effects while optimizing bioavailability (Sun et al., 2025). The use of staggered, kinetics-based administration helps sustain circulating levels of bioactive compounds, a strategy increasingly explored for its role in modulating chronic inflammatory and immune pathways. This structured timing may also enhance synergistic interactions among compounds that act on complementary molecular targets (Grover et al., 2021). Collectively, this deliberate temporal and dosing design strengthens the scientific credibility of the protocol, positioning it as a structured, systems-based intervention rather than a conventional supplement regimen.

Conclusion

The patented multi-formulation protocol for Non-Hodgkin lymphoma is conceptually aligned with emerging insights in immunology, oncology, and systems biology. Each formulation is designed to influence interconnected biological pathways including immune modulation, oxidative stress balance, metabolic regulation, and gut microbiome homeostasis mechanisms increasingly recognized as relevant to lymphoma progression and therapeutic response. The structured dosing schedule further strengthens its scientific rationale. Grounded in pharmacokinetic principles, synergistic compound interaction, and adaptive physiological response, the protocol reflects a deliberate and individualized supplementation strategy rather than an arbitrary combination approach. Importantly, this integrative framework is positioned as an adjunct to conventional NHL therapies, intended to complement not compete with established standards of care. As a biologically informed, systems-based intervention, it represents a structured model that warrants further investigation through well-designed clinical and controlled studies.

Call to Action

Scientific foundations of the proposed treatment regimen of this patent should be the subject of systematic clinical research and translational studies. Close observational study and controlled clinical trials are needed in order to provide safety, efficacy and optimal combination with conventional Non-Hodgkins Lymphoma therapeutic approaches. The integration of mechanisms and patient outcomes should be encouraged by oncologists, immunologists, nutrition scientists, and integrative medicine researchers who should collaborate to stimulate the holistic assessment of the mechanistic pathways and patient outcomes. The research regulatory group structures may equally assist in ensuring that the formulations undergoing evaluation are based on the standards of evidence according to the present-day standards of oncology. It can contribute to the benefit of this protocol in the future by contributing to its systematic scientific validation, which will be able to subsequently support comprehensive, robust and patient-centered care plans, of the Non-Hodgkins Lymphoma patients.

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