JOBELYN, IMMUNE SYSTEM, HIV AND CORONAVIRUS

THE AMAZING POWERS OF JOBELYN

For centuries the people of South-Western Nigeria depended on a herbal extract to cure diseases of diverse origin, including Anemia, Sickle Cell Anemia, Arthritis, Stroke, Hypertension, Diabetes, Infertility, Malaria, Cardiovascular diseases, HIV/AIDS, Leukemia, Multiple Myeloma, Breast Cancer, Hodgkin's Lymphoma, Lupus, neurological diseases etc. This remedy was handed over by their forefathers from generation to generation. Scientists would ordinarily dismiss this claim as it was difficult to substantiate with credible evidence. The main ingredient for the preparation of this medicinal product is the special Sorghum bicolor leaf sheath which is only available at a particular location in Nigeria.

It has taken more than 20 years to unravel the mystery behind this miraculous herbal remedy. I had a strong resolve to pursue this mystery scientifically and only in recent times I am having a clue that would be accepted as credible.

Immune System Response

It takes a little more explanation to understand how Jobelyn supports the immune system. As with the case of red blood cell health, we need to drop down to a cellular and molecular level and think very small. It's the antioxidant activity that is most vital for immune system support. Specifically, the extract provides components for the body to build its own super antioxidant: glutathione peroxidase.

The body creates glutathione and uses it for several protective tasks including protecting certain immune system cells called CD4 T-lymphocytes. Glutathione contains selenium and three amino acids (cystein, glutamine, and tryptophan). Jobelyn contains all three of these amino acids, providing the body with some major building blocks of glutathione.

Scientists believe this explains some astounding research coming out of Africa right now. In a preliminary human clinical study involving HIV-positive patients, Jobelyn supplementation improved compromised CD4 cell counts (30-300/1) by 200-300%. Those with initial CD4 counts greater than 300 also saw an increase of 20-30%. The increase in cellular immunity occurred regardless of whether the patient was taking other antiretroviral drugs.

Jobelyn is incredibly beneficial for the immune system when the body is under one of the heaviest attacks imaginable. It makes sense that the herbal would be helpful as a general immune system boost for anyone in fine health. Its effects appear to be moderated too; meaning it won't make the immune system become overactive. That's why we see such a dramatic increase for those with very compromised CD4 counts and a moderated increase for those who had higher initial counts. So, Jobelyn is a safe immune support supplement whether you're looking for a little extra help during cold and flu season, or if you're facing a much more daunting immune system challenge.

We have researched to find scientific evidence to support the role of oxidative stress in many diseases to buttress the assertion that Jobelyn, being one of the most powerful natural antioxidants has a prominent role to play in maintaining wellness and treating of many diseases.

WHAT YOU NEED TO KNOW ABOUT IMMUNE SYSTEM AND CORONA VIRUS

Since SARS-CoV-2 is so new, there's currently no cure. But doctors have been able to use supportive care and other antivirals to try to help patients.
Early studies show some evidence that certain medications, including those that treat HIV, may help fight the virus.

Jobelyn has got scientific evidence to support the claim that it is a powerful immune booster.

Many claims for immune boosting are not scientifically validated although many natural products have some measure of immune boosting properties. They cannot be trusted to provide the immune coverage that is required to combat the coronavirus problem.

In a recent publication by scientists from China, this is an extract from the research publication:

Coronavirus Infections and Immune Responses

Coronavirus Infections and Immune Responses
Article *in* Journal of Medical Virology · January 2020

Coronaviruses (CoVs) are by far the largest group of known positive-sense RNA viruses having an extensive range of natural hosts. In the past few decades, newly evolved Coronaviruses have posed a global threat to public health. Immune response is essential to control and eliminate CoV infections, however, maladjusted immune responses may result in immunopathology and impaired pulmonary gas exchange. Gaining a deeper understanding of the interaction between Coronaviruses and the innate immune systems of the hosts may shed light on the development and persistence of inflammation in the lungs and hopefully can reduce the risk of lung inflammation caused by CoVs.

READ FULL ARTICLE

Please see the following link on immune system and coronavirus:

https://www.euronews.com/2020/04/09/understanding-covid-19-the-unknown-disease-with-multiple-faces

SUPPORTING EVIDENCE FOR IMMUNE MODULATING POWER OF JOBELYN

West African *Sorghum bicolor* Leaf Sheaths Have Anti-Inflammatory and Immune-Modulating Properties *In Vitro*

Kathleen F. Benson,[1] Joni L. Beaman,[1] Boxin Ou,[2] Ademola Okubena,[3] Olajuwon Okubena,[3] and Gitte S. Jensen[1]

Abstract from Research Publication by NIS (Natural Immune System) of USA:

West African Sorghum bicolor Leaf Sheaths Have Anti-Inflammatory and Immune-Modulating Properties In Vitro Kathleen F. Benson,1 Joni L. Beaman,1 Boxin Ou,2 Ademola Okubena,3 Olajuwon Okubena,3 and Gitte S. Jensen1 1 NIS Labs, Klamath Falls, Oregon, USA. 2 Dover Sciences, Franklin, Massachusetts, USA. 3 Health Forever Products Inc., Lagos, Nigeria. ABSTRACT The impact of chronic inflammatory conditions on immune function is substantial, and the simultaneous application of anti-inflammatory and immune modulating modalities has potential for reducing inflammation-induced immune suppression. Sorghum-based foods, teas, beers, and extracts are used in traditional medicine, placing an importance on obtaining an increased understanding of the biological effects of sorghum. This study examined selected anti-inflammatory and immune-modulating properties in vitro of Jobelyn, containing the polyphenol-rich leaf sheaths from a West African variant of Sorghum bicolor (SBLS). Freshly isolated primary human polymorphonuclear (PMN) and mononuclear cell subsets were used to test selected cellular functions in the absence versus presence of aqueous and ethanol extracts of SBLS. Both aqueous and nonaqueous compounds contributed to reduced reactive oxygen species formation by inflammatory PMN cells, and reduced the migration of these cells in response to the inflammatory chemoattractant leukotriene B4. Distinct effects were seen on lymphocyte and monocyte subsets in cultures of peripheral blood mononuclear cells. The aqueous extract of SBLS triggered robust upregulation of the CD69 activation marker on CD3 - CD56 + natural killer (NK) cells, whereas the ethanol extract of SBLS triggered similar upregulation of CD69 on CD3 + CD56 + NKT cells, CD3 + T lymphocytes, and monocytes. This was accompanied by many-fold increases in the chemokines RANTES/CCL5, Mip-1a/CCL3, and MIP-1b/CCL4. Both aqueous and nonaqueous compounds contribute to anti-inflammatory effects, combined with multiple effects on immune cell activation status. These observations may help suggest mechanisms of action that contribute to the traditional use of sorghum based products, beverages, and extracts for immune support.

READ THE FULL ARTICLE

We discovered an independent organization on the internet which achieved a spectacular result using Jobelyn to cure HIV patients. See extracts from the interview below:

AIDS: 21st century's biggest fraud
https://www.pravdareport.com/health/121133-aids_fraud/

Pravda.Ru: And the Gafi Institute has discovered herbal remedies?

CM: Joan Shenton, award-winning British producer and journalist referred to the claims of AIDS in Africa as a bad science; I agree absolutely with that. During our five years of research, the Gafi Institute discovered a couple of drugs which have over the last ten years transformed so- called AIDS patients to test negative after a short period of use. One of such is Joby formular, now known as Jobelyn. Jobelyn was discovered by the Gafi research to be just a herbal therapy used for replenishing lost body nutrients.

I should state that this therapy transformed 1520 Aids patients who were administered with the therapy by doctors at the Gafi institute, in six months to test negative. If a nutrient replacement therapy/supplement can transform a patient's status from positive to negative, I think there is no better proof to counter the lies saying AIDS is a killer disease rather than a state of immune deficiency which can be as a result of well over sixty different diseases or conditions.

READ THE FULL ARTICLE

We proceeded to do clinical studies for HIV patients at the Military and Police Hospitals in Lagos.
Please see the Abstract below:

Abstract Objectives: The purpose of this study was to evaluate a traditional herbal preparation, Jobelyn, for its effects on anemia and CD4 + T-cell counts in human immunodeficiency virus–positive (HIV +) patients in Nigeria. Design: An open-label pilot study involving 10 confirmed HIV + patients who were not receiving antiretroviral therapy (ARVT) was performed, in which the patients consumed Jobelyn for 8 weeks, at a dose of 500 mg twice daily. The pilot study was followed by a controlled trial involving 51 patients, all confirmed HIV + , where the patients with CD4 + T-cell counts below 350 cells/lL were receiving ARVT. The eight patients with baseline CD4 + T-cell counts above 350 cells/lL received Jobelyn. The remaining patients who all received ARVT were randomized to ARVT alone versus ARVT + Jobelyn for 12 weeks. Results: Patients receiving ARVT showed a statistically significant improvement in their CD4 + T-cell counts across the 12-week study period ($p < 0.01$). Patients receiving ARVT + Jobelyn showed a faster improvement, reaching a high level of statistical significance compared to baseline already at 6 weeks ($p < 0.001$), and remained highly significant at 12 weeks ($p < 0.001$). Conclusions: This is the first controlled study conducted to evaluate efficacy of Jobelyn on immune status in HIV + patients. The data suggest that consumption of Jobelyn contributed to improved hemoglobin levels and increased CD4 + T-cell counts in Nigerian HIV + patients. Further studies are needed to examine similar effects in other populations, and to elaborate on the underlying mechanisms, specifically, whether the consumption of Jobelyn supported multiple aspects of bone marrow function.

READ THE FULL ARTICLE:

To solidify our investigations on Jobelyn, we got the active ingredients in Jobelyn and the results were published in peer-reviewed journals:

1.
Abstract: The growing interest in natural alternatives to synthetic petroleum-based dyes for food applications necessitates looking at nontraditional sources of natural colors. Certain sorghum varieties accumulate large amounts of poorly characterized pigments in their nongrain tissue. We used High Performance Liquid Chromatography-Tandem Mass Spectroscopy to characterize sorghum leaf sheath pigments and measured the stability of isolated pigments in the presence of bisulfite at pH 1.0 to 7.0 over a 4-wk period. Two new 3-deoxyanthocyanidin compounds were identified: apigeninidin-flavene dimer and apigenin-7-O-

methylflavene dimer. The dimeric molecules had near identical UV-Vis absorbance profiles at pH 1.0 to 7.0, with no obvious sign of chalcone or quinoidal base formation even at the neutral pH, indicating unusually strong resistance to hydrophilic attack. The dimeric 3-deoxyanthocyanidins were also highly resistant to nucleophilic attack by SO2; for example, apigeninidin-flavene dimer lost less than 20% of absorbance, compared to apigeninidin monomer, which lost more than 80% of absorbance at λmax within 1 h in the presence of SO2. The increased molecular complexity of the dimeric 3-deoxyanthocyanidins compared to their monomers may be responsible for their unusual stability in the presence of bisulfite; these compounds present new interesting opportunities for food applications.

READ FULL ARTICLE

2.
abstract 3-Deoxyanthocyanidins are promising natural colourants due to their unique properties compared to anthocyanins. However, thermal stability of 3-deoxyanthocyanidins is largely unknown. Thermal stability of crude and pure 3-deoxyanthocyanidins was determined at 95 C/2 h and 121 C/30 min, at pH 1–7 using HCl, formic or citric acid as acidulants. The colour retention of crude and pure 3-deoxyanthocyanidins (79–89% after 95 C/2 h and 39–118% after 121 C/30 min) was high compared to literature reports for anthocyanins under similar treatments. pH significantly affected the thermal stability of 3-deoxyanthocyanidins: Colour retention was better at pH 1–2 (70.2–118%) than at pH 3–7 (39.0–86.8%). Chalcones were identified as the major heat degradation products at pH 3–7. Slow rate of chalcone formation and resistance to C-ring fission were identified as the major contributors to thermal stability of 3-deoxyanthocyanidins. Overall, the heat stability of 3-deoxyanthocyanidins indicates good potential for food use.

READ FULL ARTICLE
http://afritradomedic.com/pdf/Thermal%20stability%20of%203-deoxyanthocyanidin%20pigments%20Food%20Chem%202014.pdf

The active compounds were subjected to in vivo laboratory tests at MD Biosciences and the summary of the result is shown below:

1. SUMMARY

Four compounds were tested for their ability to reduce PGE2 secretion from human peripheral blood mononuclear cells (PBMC) in the presence and absence of lipopolysaccharide (LPS) as an indirect assay for COX activity.

1.1. *Conclusions*

High concentrations of P11, and to a lesser extent P8, reduced cell viability suggesting that P11 and P8 may be cytotoxic and/or cytostatic at high concentrations.

P8 and P9 displayed a dose-dependent decrease in PGE2 production suggesting that these compounds may be affecting COX-2 activity. The inhibitory activity of P8 was greater than P9. P10 and P11 affected LPS-stimulated PGE2 secretion at some of the concentrations tested.

None of the compounds displayed a consistent decrease in PGE2 production from cells not treated with LPS. However, some of the samples showed statistically significant effects.

The results were published in a peer-reviewed journal:

Apigenin and apigeninidin isolates from the Sorghum bicolor leaf targets inflammation via cyclo-oxygenase-2 and prostaglandin-E2 blockade

Abstract Aim: This study evaluated the anti-inflammatory properties of a species of Sorghum bicolor leaf (SBL) grown in West Africa. Method: Cyclo-oxygenase (COX)-2:COX-1 selectivity assay was carried out by plating isolated peripheral blood mononuclear cells in culture medium with specific SBL fractions: crude extract (J), ethyl-acetate (JE) and aqueous (JA); secondary compounds from JE (JE5, JE6, JE7 and JE8); purified (P9) and semi-purified (P8) compounds from JE5 at 5-200 µg/mL for 1 hour. Test compounds and controls ibuprofen (50 µmol/L) and CAY10404 (1 µmol/L; 10 µmol/L) were added to two sets of plates, one without lipopolyshaccharide (LPS) and the other with LPS (1 µg/mL) for 24 hour. COX-2IC50: COX-1IC50 ratio represented 50% inhibition of the activity of COX-2 to that of COX-1 using ibuprofen as control. In separate experiments the supernatant of P8 and P9- treated fractions of SBL and controls were plated with RAW 264.7 macrophage cells to measure prostaglandin (PG)-E2 production and cell proliferation activity. Results: JA fraction of SBL had the highest ratio of COX-2IC50:COX-1IC5041.214 whereas JE had the lowest ratio COX-2IC50:COX-1IC501.161. Interestingly, JE5 derived from JE showed a ratio of COX-2IC50:COX-1IC500.495 while P8 derived from JE5 showed a dose-dependent reduction in

COX-2IC50:COX-1IC50 ratio and in PG- E2 production, which was more effective compared to ibuprofen. A dose-dependent reduction in RAW 264.7 macrophage cell proliferation was also observed in P8-treated cells. The phenolic compounds identified in P8 include apigenin and apigeninidin adducts which may explain the exceptional anti-inflammatory activity and efficacy in COX-2 targeting.

READ FULL ARTICLE

A very important of Jobelyn's immune power was demonstrated in the **Natural Killer Cells** with Tests done at USA showing how Jobelyn activates the immune system.

Newly isolated compounds from West African Sorghum bicolor leaf sheaths Jobelyn® show potential in cancer immunosurveillance

Abstract
Jobelyn®, a West African pharmaceutical product derived from Sorghum bicolor leaf sheaths has been shown to possess strong anti-tumour and anti-inflammatory properties. This study aims to evaluate the expression of cell surface markers CD69 on activated natural killer (NK) cells; natural killer T (NKT) cells; and T cells from human peripheral blood mononuclear cells (PBMC) upon treatment with Jobelyn® fractions using flow cytometry. Blood was collected from 3 donors, PBMC were isolated and plated with each specific fraction: crude extracts (J); ethyl acetate (JE); n-butanol (JB); secondary compounds from JE (JE5; JE6); purified and semi-purified compounds from JE5 (P8 and P9) at specific concentrations (2.5-500 μg/ml). For the crude extracts, JE was the most active showing significant expression of CD69 on NK-($P < 0.001$), T- ($P < 0.0001$), and NKT- treated cells ($P < 0.0001$). Secondary compound, JE5, of JE also showed significant CD69 expression on NK- ($P < 0.018$) and T-treated cells ($P < 0.027$), but not on NKT-treated cells ($P > 0.084$). Similarly, the semi-purified compound P8, from JE5 showed increased expression of CD69 on NK- (P0.023); T- ($P < 0.001$), and NKT-treated cells ($P<0.007$). Evidence of innate effector cells activation by ethanolic extracts of Jobelyn® suggests that this variety of Sorghum may be able to mediate direct cell cytotoxicity supporting the control and clearance of a number of tumour cells.

READ FULL ARTICLE

SAFETY OF JOBELYN

TOXICOLOGICAL STUDIES ON JOBELYN

Sub-acute toxicological effects of Jobelyn® on pregnant albino rats

Abiodun Humphrey Adebayo, Omolara Faith Yakubu, Godwin Eneji Egbung, Olabisi Ibidun Williams, and
Olajuwon Okubena

Citation: AIP Conference Proceedings **1954**, 030018 (2018); doi: 10.1063/1.5033398
View online: https://doi.org/10.1063/1.5033398

Abstract. The aim of the present study was to investigate the sub-acute toxicological effects of Jobelyn® on pregnant albino rats by employing biochemical, haematological and histopathological methods. A total of 32 pregnant female rats were randomly assigned to four different groups of eight rats each. The control group received distilled water and different doses of Jobelyn®; 250, 500, 1000 mg kg-1were administered orally once a day for 2 weeks to the other groups.

Biochemical analysis revealed a significant decrease ($p<0.05$) in the levels of alanine aminotransferase, albumin, urea, PCV and Hb in the treatment groups when compared to the control. However, the significant decrease in PCV and Hb was observed solely in the group treated with 1000 mg kg-1body weight, suggesting that this decrease could be dose dependent.

Alkaline phosphatase, total protein, triglycerides, cholesterol, HDL cholesterol, LDL cholesterol, eosinophils, basophils, neutrophils, monocytes, lymphocytes, WBC count, revealed no significant difference ($p<0.05$) when compared to the control. The results show that at an appropriate dosage, the use of Jobelyn® during pregnancy may have no adverse effect on the liver and kidney tissues and may possess hepatoprotective and nephroprotective properties however the histopathological studies revealed that very high levels of Jobelyn may be hepatotoxic.

See Link to full Publication

THE SHORT TIME EFFECT OF EXTRACT OF SORGHUM BICOLOR (JOBELYN) ON THE HAEMATOLOGICAL PARAMETERS OF PATIENTS WITH SICKLE CELL ANAEMIA

Abstract: Sickle cell anaemia in South West Nigeria has a prevalence of 2.4 %.It is characterized byrecurrent crisis like bone pain, hyper haemolysis, acute sequestration, red cell aplasia and progressive organ damage. These cause high absenteeism at school and at work with a significant reduction in life expectancy. The phytochemical extract of sorghum bicolor has been shown to have anti-inflammatory antioxidant effect; and to increase the haemoglobin in experimental rat. The extract is consumed widely in Nigeria by patients with sickle cell anaemia.
This study seeks to assess the effect of this extract on haemopoiesis in these patients.
The study population was the patients attending the adult haematology clinic of the Lagos State University Teaching Hospital. It was a randomized open label study with 105 consenting participants.
One group was given folic acid 5mg twice daily and paludrine 200mg daily. The other group had in addition, 1gm of extract per day in two divided doses for 4 weeks. The haematological parameters were taken weekly.
After 4 weeks of taking the extract, there were reduction in white blood cells (p= 0.10) and platelet counts (p= 0.03).There were significant reductions in the mean red cell haemoglobin (p=0.0004), mean cell haemoglobin concentration (p=0.0001) while the reduction in mean cell volume and haematocrit changes were minimal (p=0.3and 0.5 respectively).
The reduction in leukocytes and platelets counts suggests an anti-inflammatory effect of the extract which may have a clinically positive effect. The significantly reduced cellular haemoglobin concentration and minimal changes in haematocrit demonstrate that the extract will not unduly increase the red cell haemoglobin concentration which may promote sickling.

See Link to full Publication

An open-label, randomized, parallel-group comparative study of the efficacy of sorghum bicolor extract in preoperative anemia

a b s t r a c t
Objective: Anemia in patients presenting for elective surgery is associated with increased morbidity, allogeneic blood transfusion, and delay of surgery. Extract of sorghum bicolor has been shown to have hemopoietic, immune-stimulating, and

antioxidant effects in rats and in patients with HIV. The aim of this study was to determine the effect of the extract in patients with preoperative anemia booked for myomectomy.
Methods: Consenting patients (N ¼ 66) were randomly assigned to two groups. The test group (n ¼ 34) was given folic acid 5 mg/d, 200 mg iron tablet three times daily, and 500 mg/d of the extract. The control group (n ¼ 32) was given the same doses of folic acid and iron for a period of 3 wk. Blood samples were taken at baseline and weekly for full blood cell count and liver and kidney function tests. Participants were screened for tuberculosis, HIV, hepatitis, and sickle cell anemia.
Results: Increases in red blood cell count, hematocrit, and hemoglobin concentration in participants in the test group were highly significant ($P < 0.0002$, $P < 0.0001$, and $P < 0.0001$, respectively).
Participants in the control group had a significant increase in the hemoglobin concentration ($P > 0.04$). The changes in liver enzymes, urea, and creatinine for participants in the test group were within the normal ranges.
Conclusion: The addition of the extract of sorghum bicolor to routine hematinics is superior to the use of routine hematinics alone. Although the difference is not statistically significant, the extract will correct preoperative anemia in an additional 15% of the patients.

See Link to full Publication

Toxicological Profiles of Commercial Herbal Preparation, Jobelyn
Abstract
PURPOSE: Jobelyn® is a commercial herbal product recommended for the management of anemia related illnesses. Despite its wide use, there is limited report on its toxicological profile. This study examined the acute and short term chronic toxicity profiles of the product with emphasis on the LD50, gross morphological and histopathological effects.
METHODS: Albino mice (mean weight: 16.45±3.14g) were used in this study. For acute toxicity, graded concentrations of Jobelyn® were administered orally and intraperitoneally as single doses to the mice.
Intraperitoneal administration of sub-lethal doses daily for 14 days was adopted for the short term chronic toxicity studies.
RESULTS: The LD50 following oral and intraperitoneal administration were 215.06 mg/kg ($r = 0.916$) and 193.37 mg/kg ($r = 0.995$), respectively. The major

behavioral/ morphological effects at high doses were reduction in motor activity, piloerection and sedation. The sub-lethal doses did not significantly modify the normal behavioral repertoire of licking, grooming and sniffing. Histopathological examination also did not indicate severe pathological changes. At the lethal doses, some degree of congestion was noticed in the lung, liver splenic and kidney tissues. Short-term chronic studies did not produce further toxic effects but transient mild sedation and piloerection and histopathological examination revealed only mild congestion in the organs. No death of the animals was recorded during the period of sub chronic toxicity assessment.
CONCLUSION: Jobelyn® is likely to be safe for use in humans when administered at recommended doses.

See Link to full Publication

Evaluation of the effects of Jobelyn™ consumption on red blood cell count and quality

Executive Summary

The goals for this clinical study were to examine the effects of Jobelyn™ on the blood count in general, and specifically on red blood cell health in a borderline anemic, otherwise healthy North American population, as a parallel to several studies performed in West Africa, where sickle cell anemia, HIV, malaria, and other microbial diseases affecting red blood cell health, production, and senescence, are prevalent.

The outcomes were clear, and included the following:

1**) Safety documentation**

Overall, people consuming Jobelyn™ for 8 weeks had a similar blood count profile as people consuming placebo for 8 weeks.

2) **Red blood cell health**

People consuming Jobelyn™ showed extremely small, but significant changes to red blood cell parameters. However, the changes were not as simple as expected, and point to a complex array of effects in bone marrow and spleen with consumption of Jobelyn™. The surprising reduction in red blood cell counts (mild, but significant), accompanied by an increase in mean cell volume, and changes in other parameters reveals a complex effect of Jobelyn™ on formation of blood cells, suggesting an improved clearance of senescent RBC, accompanied by increased production of new RBC. The changes may also be related to a reduced

inflammatory status. Further testing of cytokine profile will help put this data into context.

3) **Effects on immune cells**

Consumption of Jobelyn™ was associated with a rapid increase in the blood levels of monocytes and platelets. Whether this is associated with immune activation as well as bone marrow support is a question for future study.

4) **Blood glucose**

Consumption of Jobelyn™ was in general not associated with reduced fasting blood glucose in this study population. A few cases showed rapid changes, and based on this data further work may be planned.

During the study serum samples were banked from each blood draw. This material is available to pursue further testing without repeating the clinical part of the study. Serum testing may include detailed analysis of pro- and antiinflammatory cytokines, as well as stem cell related growth factors.

Safety

The data presented here helps document basic safety aspects of Jobelyn™ consumption in a North American population. The rapid changes in red blood cell numbers and T cell numbers in West African studies in HIV+ populations could raise the question whether Jobelyn™ consumption is safe to consume for people who have close to normal numbers of such cell types, and whether Jobelyn™ consumption may trigger cellular production in the bone marrow that may be out of control. The data presented in this report clearly documents that Jobelyn™ consumption does not trigger such unhealthy production of cells. This can be seen as an important part of Jobelyn™'s safety data portfolio.

The highly specific activation of immune cells, documented in vitro [Benson et al. 2013], could lead to safety related concerns, such as whether Jobelyn™ consumption may trigger overactivation of immune reactions. The current data presented in this report does not suggest such events. Rather, the changes seen were either normalizing or transient, suggesting that Jobelyn™ consumption supports a healthy normalization of many aspects of red and white blood cell production and function.

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