

Evaluation of SAAAB as a Polyherbal Formulation for the Treatment of Ataxia

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Abstract: Ataxia is a complication of high blood pressure and diabetes with a clear cut deficiency of ubiquinone central to depletion of vitamins notably vitamin E. this study therefore sought to determine the presence of ubiquinone contained in SAAAB as it was evidence in a remarkable improvement in area of cerebral dysfunction improvement and a notable decrease in the ICARS' score after six months of supplementation.

Keywords: SAAAB, vitamin E, ICARS,

I. Introduction

Dementia is a non-specific syndrome in which affected areas of brain function may be affected, such as memory, language, problem solving and attention. Dementia, unlike Alzheimer's, is not a disease in itself. When dementia appears the higher mental functions of the patient are involved initially. Eventually, in the later stages, the person may not know what day of the week, month or year it is, he may not know where he is, and might not be able to identify the people around him.

Dementia is the progressive deterioration in cognitive function - the ability to process thought (intelligence) Progressive means the symptoms will gradually get worse. The deterioration is more than might be expected from normal aging and is due to damage or disease. Damage could be due to a stroke, while an example of a disease might be Alzheimer's. Dementia is significantly more common among elderly people. However, it can affect adults of any age.

Approximately 700,000 people in the United Kingdom have dementia, out of a total population of about 61 million. Your chances of having dementia are 1 in 100 during your late 60s, this rises to 6 in 100 in your late 70s, and 20 in 100 in your late 80s. As people live longer experts predict dementia will rise significantly. According to predictions, there will be 940,000 people with dementia in the United Kingdom by 2021. (Alzheimer's Society -UK),

Approximately 24.3 million people had dementia worldwide in 2005, with 4.6 million new cases every year. The number of people with dementia will double every two decades and reach 81.1 million by 2040. The rate of increase is expected to be faster in developing countries which have rapidly-growing life expectancies. (Lancet. 2005 Dec 17; 366(9503):2112-7)

Common drugs may treat dementia one day - drugs that are used to treat skin conditions, high blood pressure and diabetes could eventually be used one day for the treatment of Alzheimer's disease. Researchers from King's College London reported in the journal Nature Reviews Drug Discovery (issue October 2012):

- Coenzyme ubiquinone, taurine and magnesium are very helpful for lowering of high blood pressure and good health of heart, and may considerably reduce the risk of dementia.
- L-carnitine makes the heart stronger, while Vit E and Vit C are very good because they make the immune system stronger and protect the heart.
- Furthermore, potassium is used in order to help the heart to work efficiently and to contract easily
- An ethnomedicinal poly herbal formulation called DAABS-2 with Vernoniaamygdalina, Dioscoreaalata and zeamays for the management of diabetes activate the brain and inhibit the formation of plaques.

Now that chronic and endemic diseases such as diabetes, hypertension, cancer etc as mentioned herein are better managed with herbal supplements, it is therefore logical that SAAAB, HAABS and DAABS, an ethnomedicinal polyherbal formulation indicated for the management of chronic, endemic and other wasting diseases, would by logical postulation reduce the risk of dementia. The constituents of SAAAB, HAABS and DAABS include; sesamumindicatum, Vernoniaamygdalina, Aloe barbadensis, Saccharumofficinarum, Allium sativum, Amaranthuscaudatus, Pinto bean seed zingibirofficinale and Dioscoreaalata L and zeamayzrespectively. The medicinal uses of the constituents of SAAAB, HAABS and DAABS are well documented in literature (Dalziel 1937).

But like most traditional medicines in Africa, little or no scientific information is available on this polyherbal component preparation that is akin to the Chinese traditional medicine (TCM) or the India Ayurvedic preparation.

These active constituents are believed to strengthen the immune system through many cytokines and chemokines regulations. With the abundant presence of tannins, phlobatannins, flavonoids, steroids, terpenoids, saponins, ubiquinone, a co-enzyme that plays a key role in the production of energy within cells, and cardiac glycosides, which are the most important bioactive constituents of medicinal plants, the poly herbal preparation is able to improve ataxia, reduce seizure, reduce palpitation, reduce the risk of angina and congestive cardiovascular Diseases and diabetes, the prime diseases that wind up to dementia, ataxia and Alzheimer.

II. Materials And Methods

STUDY DESIGN: The study is a descriptive cross-sectional survey

STUDY AREA: This study was carried out at the Medical Laboratory Department of Halamin Chemicals Nigeria Limited, Abuja F.C.T. This is a pharmaceutical company that specializes in the research and manufacture of supplements of African origin indicated for the management and treatment of various non Communicable diseases and some communicable diseases. Approval was sought and obtained from the inventor of Halamin herbal products before this work was carried out

DATA COLLECTION: social-demographic data including age, sex, presenting complaints, relevant signs elicited and conventional anti-diabetic and anti-hypertensive pretreatment were obtained from the client verbally. Routine laboratory tests including complete blood count, blood chemistry and thyroid function, blood sugar and BP were carried out and results recorded.

Case Report

A 52-year-old woman with a long standing diabetes and hypertension developed retinopathy and stroke. She presented with numbness, blurred vision and migraine. After a while, the condition degenerated and the woman wound up with ataxia as she presented with slurring speech, rapid alternating movements and finger-nose testing with oscillating movement, without decomposition.

Finger-finger test evidenced mild instability for the action with no action tremor. On knee-tibia test, movement was decomposed in several phases and was abnormally slow with no tremor.

Pronation-supination alternating movements were slow and irregularly performed. Ocular pursuit was saccadic.

Balance evidenced slight oscillation with feet together, but she was unable to walk with feet in tandem position.

Gait speed was slightly reduced with broad base

Limb tone and tendon reflexes were decreased. No muscle weakness was observed. Plantar response was flexor.

Normal oculi fundi and cognitive level present.

Electrocardiogram, motor, sensory nerve condition and electromyography were normal.

Brain MRI showed severe cerebellar atrophy (her medical report from radiology department, university of Jos).

Routine laboratory tests including complete blood count, blood chemistry and thyroid function were normal except for the blood sugar and BP that were on the high side.

Inherited causes of ataxia were also ruled out (ataxia telangiectasia, Friedrerich ataxia, ataxia with vitamin E deficiency and a beta lipoproteinemia)

Muscle and skin biopsies were taken and studies for diagnosis of a mitochondrial disorder were started

III. Measurements

Neurological assessment of ataxia was performed by means of the International Cooperative Ataxia Rating Scale (ICARS)

Histological studies

Both optic (trichromic stain and immunohistochemistry of respiratory chain complexes) and electronic microscopy analysis were performed on muscle biopsies

IV. Result

Histological and biochemical studies in muscle

Optic microscopy examination of muscle biopsy showed the presence of an important sub-sarcolemmic mitochondrial accumulation

Biochemical analysis of MRC enzyme activities showed a clear decrease in both NADH cytochrome c oxidoreductase and succinate cytochrome c reductase activities with normal results for the other MRC complexes, suggesting ubiquinone deficiency.

V. Discussion

The clinical features of our patient were similar to those previously reported (7), and the main signs are probably related to the cerebellar involvement. Biochemical and histological investigation results in muscle biopsy of the index case also showed impaired results, but still without muscle clinical involvement. These observations suggest that the clinical phenotypes of this disorder may present a continuous spectrum of symptoms and signs depending on the different degrees of ubiquinone deficiency in muscle or brain (7)

In our patient, ataxia was associated with a partial ubiquinone deficiency in muscle and fibroblasts, affecting MRC enzyme activities as previously reported (7). It has been suggested that myopathic forms of ubiquinone deficiency would only show decrease ubiquinone values in muscle, while patients with predominant brain involvement would show decreased ubiquinone values both in muscle and fibroblasts (00). Partial deficiencies causing mild phenotypes would only affect the cerebellum since antioxidant defenses and ubiquinone content are very limited in this brain area.

Concerning the physiopathological mechanisms involved in ubiquinone deficiency, it seems clear that this deficiency reduces the flux of electrons from both complex I and II to complex III, and therefore, causes a mitochondrial dysfunction (7) these findings were further supported both by the histological changes observed in muscle biopsy and its track and by the cytochrome c staining analysis in fibroblasts, suggesting a mitochondrial oxidative phosphorylation dysfunction and probably, a reduction in ATP synthesis. Furthermore, in controls, supporting the potential involvement of increased oxidative stress in this disorder.

Patients with ubiquinone deficiency may benefit from ubiquinone supplementation contained in SAAAB (5), although the more severe phenotypes did not show such clear improvement in the chemical manifestations (7). Our case showed a very good ubiquinone supplementation response, with the main symptoms related with cerebellar dysfunction disappearing, and the ICARS' score decreasing after 6months of supplementation. This improvement has been observed in all patients with ataxia and ubiquinone deficiency previously reported (7,8) and the higher ubiquinone dose administered to our patient (1,200mg/day compared to 2,400mg/day), may explain these than our reference ranges, a further reduction of the ubiquinone dose should be cautiously evaluated.

CONCLUSION

SAAAB with *Vernoniaamygdalina* as its active ingredient had been used in traditional medicine for the treatment of various ailments (Igileet al., 2004), it has been used to treat gastrointestinal disorders, haematoma, malaria, inflammation, cancer, ataxia etc. In light of this finding, it has become clear that ataxia can be effectively managed with the concoctions infused from cocktails of fruits and vegetables with the abundance of ubiquinone contained in the supplement-SAAAB.