



# APEF-INFO

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Association for the Promotion  
of Leaf Concentrate in Nutrition \*



## *This edition of APEF-INFO is dedicated to our friend and collaborator Glyn Davys*

Glyn left us just a year ago and on this occasion we would like to recall the priceless support he provided to our association: his indefatigable energy, his sense of humour, his skill as a writer and his irreplaceable competence in all areas of leaf fractionation in general and leaf concentrate in particular.

When he joined APEF after moving to France in 1994, Glyn offered the association additional perspective and legitimacy, rooted deep in his past collaboration with the great pioneers such as Norman Pirie and the numerous academics, medical doctors and engineers in England, USA, India, etc... who committed themselves to this cause from the early 1940s.

In the first section of this newsletter, we present some extracts from Glyn's obituary in The Times, published on 14th February 2010, which bear witness to the rich and multi-faceted life of a man who gave his all in everything that he did.

Glyn also gave us access to a network of campaigners, researchers and organisations engaged in the promotion, distribution and use of leaf concentrate across the world. This eventually led to the formation of an international team, with Glyn as lead author, to prepare a "state of the art" review of leaf concentrate for the UN's Food and Agriculture Organisation. This accomplishment was his swansong. In the second section below, we present a short outline of this document, published in December 2010.

In the third section, we introduce two new projects that are keeping us quite busy. We feel very strongly about them, just as Glyn did. Our aim is to achieve a rigorous evaluation of the positive impact of alfalfa LC on the health of people who are HIV-positive. Finally, we make an appeal for donations in order to finance these projects.

## **GLYN DAVYS, ACTOR, WRITER AND PHOTOGRAPHER WHO BECAME A CAMPAIGNER AGAINST MALNUTRITION IN THE THIRD WORLD**

(...) Davys was a dogged champion in promoting LC as a sustainable means of fighting malnutrition in developing countries and as a way of helping to meet the increasing global demand for food. Just three days before his death, he was still compiling to-do lists for APEF, the French charity with which he had worked for the past 15 years.

(...) His inquisitive mind was obvious early on: as a boy he wrote to Einstein about bees' navigation and treasured the haphazardly-typed reply.

He was a teenage member of his local Auxiliary Unit (the forerunner of the Home Guard), declined a place at Oxford and forged the date on his birth certificate to sign up with the Navy, serving at sea as an engineer and contributing to early research in the use of radar for aviation.

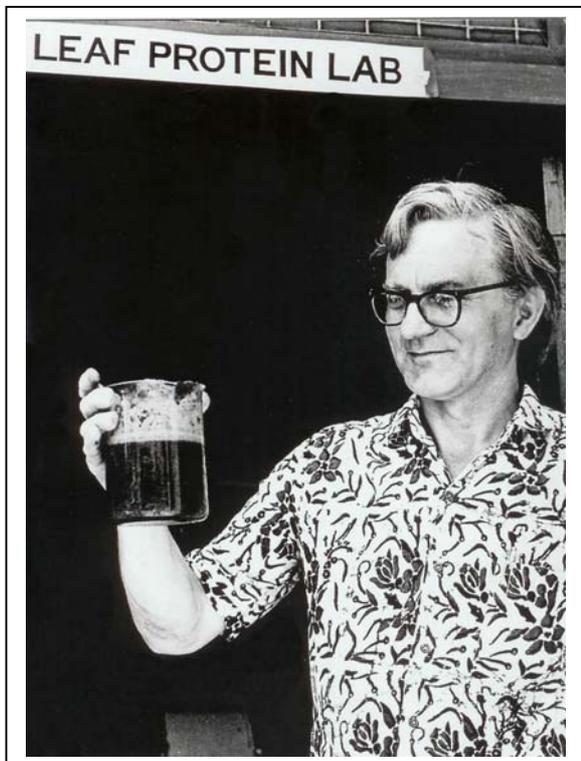
On demobilisation in 1947, he studied at the Central School of Speech and Drama. A busy acting career followed (...)

An accomplished writer and photographer, he also edited *Movement*, the journal of Rudolf Laban and Lisa Ullman's Art of Movement Guild.

For a time he joined the Communist Party, but eventually left it in horror at the atrocities of the Soviet and Chinese regimes. He was active in CND in the 1960s and remained a member until the 1980s.

Through the Britain-China Friendship Association (BCFA), Davys met the Singaporean opera singer Soo-Bee Lee and they were married in 1958 and had two children. It was another member of the BCFA, Bill Pirie, who offered him the job that changed his life.

Davys joined Pirie's team at Rothamsted Experimental Station in Harpenden, Hertfordshire, researching the use of LC, then known as leaf protein, as a human food. Soon afterwards he met Carol Martin, the inspirational founder of the charity Find Your Feet (FYF), which promoted LC to combat malnutrition. He worked with Pirie and FYF to design village-scale machinery for nutrition projects in Africa and Asia, filming powerful footage of the cheeky, wide-eyed smiles of children benefiting from an LC-fortified diet after they had been listless with kwashiorkor only two weeks before. Later he helped the American non-governmental organisation Leaf for Life with projects in Latin America.



After leaving Rothamsted in 1972, Davys worked tirelessly and unpaid for Find Your Feet in his spare time, while for some years bringing up his children on his own and running a launderette business in Brighton. Not a natural entrepreneur, he struggled financially.

His marriage ended in divorce in 1994 and two years later he was married to Judith Murtagh, whom he met while sailing at Brighton, and moved to the village of Saint-Pantaly-d'Ans in the Dordogne. Davys switched

his attention to the recently-founded APEF, helping to build a body of evidence to demonstrate LC's effectiveness in combating malnutrition, eliminating noma (an oral gangrene endemic in parts of Africa) and improving the health of people living with HIV/Aids. These positive results only increased his frustration at the repeated refusal of governments, large aid agencies and institutions to fund proper scientific trials and research into LC, but he remained optimistic.

He contributed a chapter on LC to a book published by the Food and Agriculture Organisation of the United Nations entitled *Combating Micronutrient Deficiencies: Food-based Approaches*. It was published in December 2010, just a month before he died: recognition at last of over half a century of visionary struggle. (...)

Glyn Davys, campaigner against malnutrition, was born on March 1, 1925. He died on January 4, 2011, aged 85.

*(Abstracts from an article published in The Times of London, February the 14<sup>th</sup>, 2011)*

## **LEAF CONCENTRATE AND OTHER BENEFITS OF LEAF FRACTIONATION (DAVYS ET AL, 2010)**

### **Abstract**

The fractionation of leaves was first reported over 200 years ago (...). The process breaks down the original leaves into three products: residual fibre, "whey" and leaf concentrate. (...) Through the use of all three products, leaf fractionation can be more productive, in terms of edible protein per hectare of land, than any other known agricultural method.

This paper presents the history and nutritional qualities of leaf concentrate, provides technical details of leaf fractionation at domestic and intermediate (community/semi-industrial) scales of production and reviews studies that provide evidence for the effectiveness of leaf concentrate in improving human nutritional status. It concludes by reviewing the factors that have hitherto hindered the widespread adoption of leaf concentrate and leaf fractionation. The authors suggest how these may be overcome. (...)

### Domestic-Scale Leaf Concentrate Production

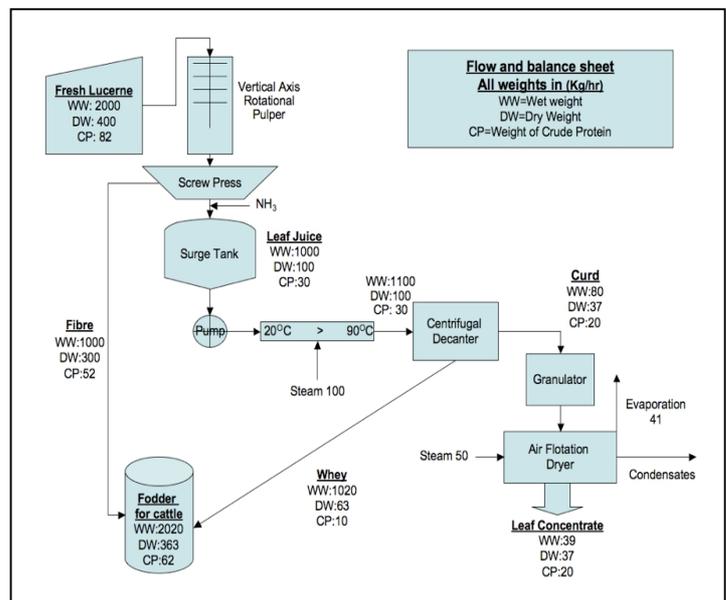
(...) Two kg of leaf will produce about 100 g of fresh, moist leaf concentrate, which is sufficient to provide significant insurance against most micronutrient shortfalls for a family of four. This quantity of leaf can be obtained in various ways, for example from a home-garden, by children weeding a cornfield (...) To have fresh leaf concentrate daily over the course of an eight-month growing season, a family of four would therefore need to obtain a total of about 500 kg of fresh leaves. (...) This means the entire leaf crop needed for the year could be raised on less than 100 m<sup>2</sup> of land.

### Intermediate-Scale Leaf Concentrate Production (ISP)

The fundamentals of ISP are derived from the experience of many, mostly village-scale, projects in Africa, Asia and Latin America, combined with learning from over 35 years' continuous industrial production of leaf concentrate in France. (...)

#### **Intermediate-scale production: case study.**

This section presents a case study of what a particular ISP scheme might look like in practice. (...) The selected scheme benefits from the continuous production of the industrial operations and is based on a unit capable of processing up to 2 tonnes/hr of fresh lucerne, producing approximately 500 kg per day of dried leaf concentrate, for an expected 240 working days per year. This would provide enough leaf concentrate for 47,000 children, at an average of 7 g per day. (...)



### Review of Evidence

The effects of leaf concentrate on the health of 105 pregnant women, and on the birth weight of their babies, were studied in Jaipur, India (...) The women were 18–35 years of age and they were enrolled in the 14th – 16th week of their pregnancy and divided randomly into two groups. The control group continued to take the regular snack (6 days each week), while the experimental group received a similar snack in which dried leaf concentrate (...) had replaced the standard ingredients in such a way that the control and experimental snacks were isoenergetic and isoproteinaceous. (...) This had the effect of significantly raising the micronutrient content of the snack, particularly in iron, calcium,  $\beta$ -carotene and folic acid. (...) In the experimental group there was a reduction (from 52 percent to 38 percent at term) in the proportion of women with moderate or severe anaemia, compared with an increase in the control group (from 60 percent to 83 percent at term). Mean haemoglobin in the experimental group was unchanged (8.8 g/dl at baseline, 9.0 g/dl at term) compared with a decrease in the control group (from 8.4 g/dl to 7.8 g/dl at term,  $P=0.02$ ). Mean birth weight in the experimental group was higher than in the control group ( $2695 \pm 322$  g vs  $2540 \pm 299$  g,  $P=0.02$ ). A sub-sample of 20 infants (10 from each group) was followed for six months. Those from the experimental group all gained weight faster than those from the control group, and their mothers reported better and quicker recovery after delivery. (...)

Most notably, in Burundi and Cameroon, two randomised controlled trials involving the consumption of leaf concentrate by people living with HIV/AIDS have shown promising results, (...)

## TRIALS PLANNED FOR 2012

### LC/AIDS trials 2007-2008 - recap

At the start, APEF's actions were only concerned with using LC to re-balance nutritionally-deficient diets, but several doctors alerted us to the astonishing results observed in numerous HIV+ patients.

In addition, we ourselves had seen how the simple LC-consumption trials, undertaken in Cameroon and Burundi, had indicated a significant beneficial impact on the quality of life of HIV+ adults and children.

In Cameroon, these observations were made over the course of a year in a trial involving 30 HIV+ adults who were not yet receiving anti-retro-viral (ARV) treatment, whilst in Burundi the study consisted of 45 children from 9 to 14 years of age who were receiving ARV. The trial in Burundi was the subject of a doctoral thesis presented to the Faculty of Pharmacy at the University of Reims.

The results were very encouraging in both studies: clinical and biological monitoring showed increases in body weight, haemoglobin levels and CD4 lymphocyte count (the HIV virus destroys CD4 lymphocytes), with a reduction in CRP (a measure of opportunistic infections) and a reduction or disappearance of diarrhoea, fever, respiratory problems and skin problems.

Meanwhile, the health of the control group participants in both trials remained stationary or deteriorated.

It seems that LC could quickly help to re-establish certain immune-system deficiencies linked to malnutrition (lack of micro- and/or macro-nutrients) aggravated by the HIV virus.

### The need for rigorous scientific studies

Encouraged by these results, we wrote to many organisations specialising in combating HIV/AIDS requesting their support to initiate larger-scale trials, but with little success.

We have therefore decided not to pursue large-scale trials for the time being, due to their cost. We have instead chosen an approach that will **reconcile the necessary scientific rigour with the financial means at our disposal**, based on well-run trials of limited duration and number of participants. Our aim is to publish the results in international scientific journals, with the hope that, over time, such an accumulated body of evidence will open the door for more ambitious studies.

In line with our revised approach, for several months we have been preparing two studies, one in Burundi and one in Cameroon. These trials will benefit from the support of Professors Bertin (nutritionist), Andréoletti (virologist) and Hazebroucq (consultant pharmacist, Order of Malta), Dr Collin (epidemiologist and statistician, UK), national ethics committees and official organisations working in the fight against AIDS, as well as numerous medical practitioners in Burundi and Cameroon.

In Burundi, the study will focus on children whose condition does not yet justify ARV medication, in order to establish whether LC can delay the need for such treatment.

In Cameroon, in one of the Order of Malta hospitals, the trial participants will be adults undergoing ARV treatment. The objectives are to confirm the effects of LC on participants' general state of health, improvement of their biological parameters, reduction in the occurrence and severity of anaemia, fever, diarrhoea and opportunistic infections (respiratory and dermal infections), eventual reduction in secondary effects of ARV treatment and resumption of their daily activities.

### ***In order to meet these challenges, APEF issues a call to all our friends for their help in raising the necessary funds.***

*If you wish, you can send a contribution to the APEF Treasurer: Micheline Davienne, 28 rue Jean Moulin 51370 Saint-Brice-Courcelles, France. If you are a French taxpayer, a tax receipt will be issued to you. It will enable you to benefit from a reduction in tax amounting to 66% of the sum donated, up to a limit of 20% of your taxable income.*