

## Nutrition News for Africa

Abstract - September 30, 2006

A study entitled “The positive impact of red palm oil in school meals on vitamin A status: study in Burkina Faso” was published in *Nutrition Journal* 2006, 5:1

### Background:

Vitamin A deficiency (VAD) is a public health problem that affects approximately 40% of the population worldwide. In Burkina Faso, 84.5% of under-fives and 61.8% of their mothers were found to be vitamin A deficient in a study conducted in 1999 in the north-central part of the country. Other Sahelian countries are similarly affected. Dietary diversification is one approach to deal with this problem, which can be sustainable in the long-term. Red palm oil (RPO) is the highest plant source of provitamin A carotenoids and is highly bioavailable because of its fat milieu and the absence of a plant matrix. A pilot study in Burkina Faso revealed that it was possible through social marketing to increase RPO consumption in women and children who were unaccustomed to it. Following the pilot study a larger project was implemented with one of its components focusing on the fortification of school meals with RPO.

### Methods:

The intervention consisted of adding 15 ml of RPO to individual meals 3 times a week in selected primary schools in Kaya department in the north-central part of Burkina Faso, and in Bogande District in the eastern part of the country. Serum retinol was measured by HPLC at baseline and 12 months later to take into account seasonal changes. In Kaya, a simple pre- post-test design was used. A total of 239 pupils aged 84 to 144 months were randomly selected from a total of 15 schools and serum retinol samples were taken before the intervention started in March 2003 and after it ended in March 2004. In Bogande, all 24 schools with an active lunch program in the District were included in a randomized controlled trial. Eight served as negative controls (G1), receiving only the school lunch, 8 served as positive controls (G2) where the children also received one vitamin A capsule (VAC) at the end of the 2003-2004 school year, and the remaining 8 schools received the lunch with RPO from November 2003 till June 2004. Serum retinol was measured in random sample of 128 pupils in each school group in November 2003 and again in the same pupils one year later.

### Results:

In Kaya pupils, the rate of low serum retinol declined from 47.2% at baseline to 13.1% in the second survey ( $p < 0.001$ ). Also, 15% of pupils had very low serum retinol at baseline but none had it one year later. At baseline there was no difference between boys and girls, but one year later serum retinol was significantly higher in girls than in boys. Children with low serum retinol improved the most. In Bogande, serum retinol did not change in the negative control group G1, but there was a significant increase in both the VAC G2 and the RPO G3 groups. As was the case in Kaya, a higher serum retinol increase was observed in the subjects who were deficient at baseline.

### Discussion:

One of the findings of this study is that VAD at school age is a serious public health problem in Kaya and Bogande. In the 15 RPO schools in Kaya and the 8 RPO schools in Bogande, low serum retinol rates decreased to 13% and 15% respectively, rendering the severe public health problem a moderate one, after an average of 28 and 51 RPO meals in Kaya and Bogande respectively over one year. An interesting finding was that the RPO and single VAC had a nearly equivalent impact on serum retinol in Bogande pupils. In both study sites, a relatively high rate of low serum retinol remained after the intervention, whether in the VAC or RPO groups, which shows that the dosage used sustains normal vitamin A status for less than 6 months. The high residual rate could also be due to underlying infections and other concurrent nutritional deficiencies.

**Conclusion:**

The study finding on high rates of VAD in school children in Burkina Faso is important as they are usually not part of the target groups for VAD control. The study confirmed the effectiveness of RPO as a food supplement for VA in primary school children. The authors support the development of RPO and its distribution at a regional level to reach other countries.