SPC Factsheet no. 18

Vitamin A

An issue for the Pacific

Vitamin A deficiency is a worldwide problem and is most commonly seen among women and children in developing countries. In the Pacific, we have some of the highest rates of vitamin A deficiency in the world.

Why is vitamin A so important?

Vitamin A has a number of very important functions in the body and when someone does not get enough vitamin A the effects are severe and widespread. They can include:

- eye damage: this begins with night blindness (difficulty seeing at night), then corneal scars develop and then, if left untreated, is followed by permanent eye damage and blindness;
- poor growth in children (and unborn babies when the mother is deficient);
- reduced immunity (resistance to infection): this leads to high rates of infectious diseases such as diarrhoea and measles, and increased death rates from these infections;
- anaemia (particularly in children and pregnant women);
- skin problems and poor wound healing;
- increased rates of miscarriage, ill-health and death in pregnant women; and
- low birth-weight and premature babies.

Increasing evidence shows that vitamin A deficiency plays a role in many health problems. There is also evidence that vitamin A can save lives.

Getting enough vitamin A

Vitamin A is found in a range of foods, and exists in two forms — retinol and carotene.

Retinol, which is the form found in animal foods. Carotene (also called provitamin A) is the form found in plant-based foods. Carotene must be converted within the body to the retinol form. A small amount of fat/oil in a meal, or a food that contains some fat, helps the carotene to be absorbed by the body. Unfortunately, a combination of poor absorption and poor conversion to the active form means that many carotene-rich foods do not provide as much vitamin A to the body as was once thought. This is particularly the case for green leaves. However, they are still valuable sources of vitamin A. One problem is that while many of these foods — such as green leaves and ripe papaya — are eaten in the region, they are eaten infrequently or in small amounts. To ensure an adequate intake of vitamin A, a range of vitamin A-rich foods should be taken on a daily basis.

The preparation of foods that contain carotene can also affect the amount that can be used by the body. Quick cooking at low temperatures is best — for example, steaming or boiling with a lid on, rather than frying. Carotenoids are destroyed by sunlight, so drying fruits, for example mangoes, should be done in the shade.

Layout: Muriel Borderie - Printed at SPC Noumea

Foods rich in vitamin A

Animal sources high in vitamin A	fish liver liver of chicken, pig, other animals breastmilk milk, cheese, butter, fortified margarine chicken egg (with yolk), fish egg
Plant sources high in provitamin A	certain types of banana, taro, seeded breadfruit* all types of sweet potato, pandanus (although some are better than others)* green leafy vegetables ripe papaya, ripe mango pumpkin, carrots
Some vitamin A	tomatoes (fresh or tinned)
No or very low vitamin A	oranges, ice-cream, rice, white wheat flour, sugar

* Recent research has shown some varieties of these local Pacific foods are higher in vitamin A than was expected. Generally, the deeper the yellow or orange colour, the higher the vitamin A content.

Breastmilk is a good source of retinol and is very well absorbed by babies. For most babies who are exclusively breastfed, breastmilk can provide all their vitamin A needs until six months of age. Breastmilk continues to be an important source of vitamin A after six months of age when complementary (solid) foods are given. Mothers who are vitamin A deficient and malnourished produce breastmilk with lower levels of vitamin A. This can cause a deficiency in their babies.

Causes of vitamin A deficiency

The principal causes are high **needs** and poor **intake**. Needs are increased:

- in pregnant and breastfeeding women;
- in children;
- with infections such as colds, diarrhoea, measles and malaria; and
- with hookworm and intestinal parasite infestation.

Activities to prevent and control vitamin A deficiency

Increase intake by:

- increasing availability and access to foods rich in vitamin A — for example, promoting home gardening of foods rich in vitamin A, supporting agriculture and fisheries, supporting egg production, working with local stores;
- raising awareness about the importance of vitamin A — for example, through schools, community groups, media; and
- educating people about how to use and cook foods rich in vitamin A.

Reduce needs by:

- preventing and treating common infections — for example, better sanitation, destroying mosquito breeding grounds, de-worming treatment.

Supplementation programmes

In many parts of the world, and here in the Pacific, countries have adopted mass population supplementation programmes to provide additional vitamin A to those people at particular risk. These programmes may include:

- high-dose capsules to children every six months;
- daily supplements for all pregnant women;
- high-dose capsules for mothers immediately after delivery; and
- emergency treatment protocol for confirmed cases.

The body is able to store vitamin A for up to six months. Depending on requirements, this means that high-dose capsules can provide enough vitamin A for up to six months.

Dangers of supplementing

As vitamin A can be stored in the body, it is possible to suffer from toxicity/overdosing.

Toxicity can only occur with supplements because the levels are extremely high in the capsules. Toxicity with food is unusual. In adults and children, the short-term effects of slight overdosing can include nausea, vomiting or headache. This can happen with the doses commonly used; however, the effects are short-lived and not serious.

taro leaves

pumpkin leaves

edible hibiscus

cassava leaves

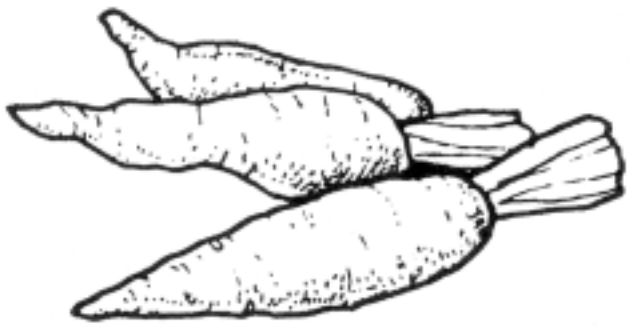
Severe overdosing, which is rare, can be fatal. It is recommended that two high-dose capsules not be given within one month of each other (except in cases of confirmed deficiency).

The main concern about overdosing is in *pregnancy*, where high levels can cause damage to the developing baby. High doses of vitamin A given to a woman during breastfeeding will not affect the baby because the mother's body will limit the amount of vitamin A going into the breastmilk. In pregnancy, caution should be taken to avoid eating liver, or it should be eaten only in small amounts, as some liver contains very high levels of vitamin A. Other foods are not a problem and contain much lower levels of vitamin A (vitamin A is needed during pregnancy and so there is no need to exclude/limit any other foods). Women who might be or are pregnant must not be given the high-dose supplement normally used. Lower doses, which can be given weekly or daily, are available for pregnancy.

Supplementation levels

Babies under 6 months:	50 000IU
Babies 6–12 months:	100 000IU
Children and adults:	200 000IU capsule every six months
New mother (after delivery):	200 000IU
Pregnancy:	25 000IU weekly or 10 000IU daily (maximum)

Women and girls at risk of being pregnant should be treated as potentially pregnant.



Produced by: Lifestyle Health Section
Secretariat of the Pacific Community (SPC)
BP D5 Noumea Cedex 98848 New Caledonia
Tel: +687 262000
Fax: +687 263818
Website: http://www.spc.int/lifestyle/