

but the moment reaction follows, the patient should be set on his constitutional remedy. Unless this be done, the patient may even die in 24 hours. (Vide page 943 of Kent's *Materia Medica*).

From all the above it occurs to me that the sole duty of the homœopath should be first to ascertain whether the patient has a disease, or is only indisposed or has an accident or is suffering from some drug effects. When it is an accident, he should resort to bandaging, etc., and of course stimulation by any process best known to him. When it is a case of indisposition, he will set the patient on an improved mode of living, such as forbidding a meal or a bath, prescribing a fomentation, etc., etc. When it is a simple case of drugging, he will resort to such measures best known to him to counteract the effects of the drug; but when the drugging has produced a miasm in the patient, he should not hold out any promise of a cure to the patient but may only put the patient on a miasmatic remedy. It is only where a natural disease is to be treated that he will select a homœopathic remedy and then and then only he will not himself be guilty of drugging, etc. To this end, therefore, he will devote more attention to the Constitutional Remedies.

DEFICIENCY OF VITAMINS AND MINERALS

R. S. RASTOGI, B.A., M.D.H.

Health cannot be maintained without the intake of a suitable well-balanced diet capable of supplying the different and varying needs of the body and thus maintaining the Vital Force at the highest level of perfection. While the Proteins are indispensable for carrying on the regeneration, repair and replacement of tissues to meet the constant wear and tear going on in the human machine, and the Carbohydrates and Fats are essential for providing

energy not only for the work a man has to do but also for the invisible work going on automatically inside the human body, there are certain other ingredients of food, the *Vitamins*, *Minerals* and water which are essential for regulating the Vital physiological functions. If only the Vitamins are excluded from the diet, and all the remaining ingredients are provided in abundance in the form of Casseinogen, starch, sugar, salts, lard and water, animals become ill, cease to grow and finally die unless a natural diet containing Vitamins in suitable quantities is resumed when they again start growing properly and gaining weight. The Vitamins are essential organic substances found in extremely small traces in practically all fresh foods, which act as indispensable catalysts for the occurrence of certain metabolic functions, keeping the growth processes and normal bodily activities in a healthy harmonious vital operation.

What diseases are caused by the deficiencies of the different vitamins and minerals will be noticed in the following sections. A knowledge of these is essential from the point of view of homœopaths, as, according to Hahnemann, all obstacles to recovery must be removed while we proceed to apply the homœopathically indicated remedy. Obviously, where sickness results from malnutrition due to deficiency of one or more of the essential ingredients in food *rather than from a lack of powers of assimilation*, Homœotherapy cannot take the place of a correction of the dietetic deficiencies. But where the deficiency symptoms are due to lack of powers of assimilation, Homœotherapy must be invoked as a corrective measure.

Medical Science nowadays utilizes Chemical Vitamin preparations in massive doses for the treatment of numerous illnesses. Homœopathy here adopts a different view. To assess the therapeutic value of the vitamins, we must make their "provings" and use them according to the law of similars. They are capable of *producing* symptoms and curing the same in potencies.

VITAMIN A

Deficiency of this vitamin tends to give rise to atrophy, keratinization and desquamation of epithelial cells, giving rise to conditions favourable for the growth of micro-organisms which cause a low grade inflammation in the devitalised epithelial layer. Thus there is a lowered resistance to infection. All epithelial surfaces are liable to be affected, but particular mention may be made of the cornea, the skin and the urinary tract. Its deficiency inhibits the regeneration of visual purple in the retina and is the cause of defective vision in dim light (nyctalopia). Its requirement in normal health is about 4000 to 5000 international units for adults, whereas in the presence of infection or diseases caused by its deficiency as much as 600,000 international units may be called for. In infancy and childhood 1500 to 4500 I.U. and in pregnancy and lactation 6000 and 8000 I.U. respectively are required. Its absorption is greatly aided by the intake of sufficient fat. Carotene, the precursor and source of much Vitamin A in the diet requires for its adequate absorption the presence of bile in the intestine. Liquid paraffin should be avoided by patients of Vitamin A deficiency as it dissolves and carries away carotene in the fæces.

Sources of Vitamin A.—Whole milk, curds, cheese, butter, pure *ghee*, red palm oil, egg yolk, liver, liver oil of certain fish, e.g., cod, halibut, the shark and the saw-fish, are rich in Vitamin A content. The shark and the saw-fish abound in Indian coastal waters and their liver oil is richer in Vitamin A than cod-liver oil though not as rich as halibut liver oil.

While *vegetable* foods do not contain Vitamin A as such, they contain *Carotene*, its precursor or "pro-vitamin A" as it is called. This fulfils the physiological functions of Vitamin A. Sources rich in carotene are: leafy vegetables such as spinach, lettuce, cabbage, amaranth leaves, coriander leaves, drumstick leaves, celery leaves, and ripe fruits such

as mangoes, papaya, tomatoes, oranges, etc.; also carrots. Roughly speaking, the greener and fresher the vegetables, the greater is their carotene content. Milk and milk products from cows and buffaloes fed on green grass are richer in Vitamin A content than those from the animals fed at home on *bhusa*, etc. It is very difficult to be sure about the Vitamin A content of *ghee*, but it is known that buffalo's *ghee* has less of this vitamin than cow's *ghee* whose Vitamin A content is between 28,400 and 71,000 international units per ounce. "Vegetable *ghee*" does not contain any Vitamin A. One teaspoonful of cod-liver oil is roughly equivalent to about 4000 international units of this vitamin.

Ordinary cooking does not destroy the carotene present in the vegetables. But prolonged heating of *ghee* in an open pan considerably destroys vitamin A.

VITAMIN B COMPLEX

This is a group containing at least nine separate factors each of which appears to play a distinctive role in metabolism.

Vitamin B₁ deficiency causes Beriberi, a disease in which there is neuritis and degeneration of the nerves leading to partial or complete paralysis of the limbs, accompanied often by dropsy and by weakness of the heart muscle leading to heart failure. Its deficiency also gives rise to habitual constipation. Its requirements are increased by the presence of *diabetes*, by heavy work or strenuous exercises and also during pregnancy and lactation. Its deficiency should be guarded against when the patient is on special diets for *diabetes*, obesity, gastric or duodenal ulcer, sprue or coeliac disease. In India its deficiency is commonest in areas where highly milled (polished) *raw* rice is consumed as the main ingredient of diet. Rice which has been boiled and dried before the removal of the pericarp, called parboiled rice, contains enough of this vitamin to prevent beriberi.

The minimum daily adult requirement is about 1 mg. or 333 international units while infants and children require

comparatively more, say 100 to 300 I.U. In pregnancy and lactation the requirement is increased two to four times.

Yeast and the outer layers of cereals removed on milling such as wheat and rice bran, as also wheat germ, peas, beans, liver and kidney are rich in vitamin B₁. Its richest sources among the ordinary foods are whole (unmilled) cereals, pulses, and nuts. Foods poor in this vitamin are meat, fish, eggs, vegetables, fruits and milk. It is destroyed by *prolonged heating*, but ordinary cooking leaves enough of it to meet the requirements of the body. Serious wastage of this vitamin is caused by washing and cooking rice, and milling and removing the outer covering of the cereals and pulses. Yeast tablets or marmite may be used when there is marked deficiency of vitamin B₁.

Now about the other factors of Vitamin B Complex group. These also are of great importance in human nutrition. Their deficiency may give rise to Pellagra, dermatitis, pigmentation, dryness and scaliness of the skin, fissures at the angles of the mouth and soreness of the tongue. The best sources of this group are yeast, milk and milk products (especially buttermilk), lean meat, liver, eggs, whole cereals and pulses.

Addiction to alcohol gives rise to deficiency of the B group of vitamins.

VITAMIN C

A deficiency of this vitamin gives rise to loss of appetite and weight, retarded healing of wounds and fractures, some forms of gingivitis, sub-periosteal hæmorrhages, intra-ocular hæmorrhages, and, in cases of marked deprivation, *scurvy*. Its deficiency should be guarded against in infants and children fed on dried milks.

This vitamin is found in fresh fruits and vegetables, especially in citrus fruits, black currants and tomatoes. Uncooked potato juice and *sprouted* vegetables, pulses and cereals are fairly rich in this vitamin. *Amla* or *nellikai* which grows abundantly in India and is very cheap, is pro-

bably the *richest natural source* of Vitamin C. The fresh juice contains nearly twenty times as much Vitamin C as the same amount of orange juice, and a single fruit is thus equivalent to one or two oranges. Cooking destroys this vitamin in some measure which is not considerable in ordinary cooking. But over-cooking of vegetables should certainly be avoided. *Amla* is little affected by cooking on account of its juice being strongly acid. The water in which the vegetables are cooked should be made use of and not wasted, as in the cooking process much of this vitamin passes into the liquid. Tinned fruits retain the vitamin C content.

The daily adult requirement is 75 mg. of the vitamin (ascorbic acid) which is provided roughly by about two and a half oranges or two *amlas*. In infancy and childhood 30 to 75 mg. is required ; during the period of active growth and during pregnancy 100 mg. may be considered sufficient while for nursing mothers 150 mg. may be called for.

Alcoholism gives rise to a marked deficiency of this vitamin.

Note—The method of sprouting cereals and pulses described in Sir Robert McCarrison's "Food" is as follows:—

"Dhal, gram, wheat, unsplit peas or any other grain is first soaked in water for 24 hours and is then spread out on damp earth or on a damp blanket and covered over with a moist cloth or sack (gunny bag) which is kept moist by sprinkling water upon it from time to time. After two or three days the grains will have sprouted and be ready for use."

"The sprouted grains should be eaten raw or after cooking for not more than two minutes."

VITAMIN D

This vitamin prevents rickets, osteoporosis and osteomalacia, regulates calcium and phosphorus absorption, deposition and retention, and thus ensures a healthy development of the body in general and the bones in particular. As there is a great demand for calcium in the body during

pregnancy, calcium reserves of the body become depleted and ostomalacia may start during this period, the earliest sign being bone-pains. If a diet rich in calcium and vitamin D is provided, it will not only save the mother from ostomalacia but also ensure a healthy development of the foetus. (See the section on Calcium). Vitamin D ensures the formation of strong regular teeth in children.

The requirement in infancy, childhood, during the periods of pregnancy and lactation is about 800 international units daily. Premature infants may require about double the amount.

Sources—It is found in liver, liver oils, egg yolk, and in milk, butter and ghee obtained from animals which are fed on green pastures and are exposed to sun light. Fish liver oil is its richest natural source. It is also formed by the action of sun light or ultra-violet irradiation on the skin by the transformation of a substance (precursor) normally present there. But exposure to sun with this object should not be carried to excess and should be carefully regulated to avoid exhaustion and "sun-burn".

Note—Some infants and children seem to show an idiosyncrasy to concentrated Vitamin D preparations. Dr. N. Morris reports a case in which even a drop of a concentrate was enough to produce a violent attack of vomiting. There is also a view that high dosage of this vitamin may produce *calcinosis* affecting especially the kidneys. There is, however, no risk of overdosage from natural sources.

MINERALS

The chief minerals whose insufficiency should be guarded against are CALCIUM, PHOSPHORUS, and IRON. In addition to these, there are other minerals needed by the body, but for all practical purposes it may be safely assumed that a generally well-balanced diet will provide enough of the latter.

Calcium—It is found abundantly in milk, skimmed milk, butter-milk, cheese and green leafy vegetables.

Amaranth, fenugreek and drumstick leaves are rich in calcium. In the section on Vitamin D, it was noticed that a deficiency of calcium in the diet may lead to rickets in children and to ostomalacia in expectant mothers. Accordingly, their diet should include plenty of milk and cheese. Normally smaller children should have at least a pint or 10 chataks of milk daily, while the older ones, and expectant and nursing mothers should be provided with at least two pints or its equivalent. In actual deficiency conditions, the amount may have to be doubled or its equivalent provided from cheese or other sources. Milk has the advantage of supplying Vitamins A and D in addition, while its calcium is more easily assimilable.

The normal daily requirement is about 0.7 gm. for adults and 1 gm. for children.

Phosphorus—If a diet contains sufficient calcium, its phosphorus content may be taken to be satisfactory. Cereals in the raw state are fairly rich in phosphorus, but cooking destroys it considerably. Sprouted cereals and pulses consumed uncooked may afford the double advantage of supplying Vitamin C and phosphorus at the same time. Milk is rich in phosphorus as well as in calcium and Vitamins A and D. Foods rich in phosphorus are milk, butter-milk, eggs, soya bean, pulses, nuts, wheat, oats, barley, cholam, ragi, water-cress, spinach, radish, cucumber, carrot, cauliflower, Brussels-sprouts, meat and fish.

The daily adult requirement is at least 1 gm.

Iron—It is an essential constituent of the molecules of hæmoglobin, the red pigment of blood, and plays an important part in blood formation. Its requirement is increased in pregnancy and in conditions involving destruction or loss of blood corpuscles as in anæmia, hook-worm infection and malaria. Foods containing iron are liver, red meat, eggs, pulses, whole cereal grains, spinach, leeks, lettuce, onions, radish, strawberries, artichoke, water-melons, asparagus, celery, cucumber, dandelion, turnip leaves and tomatoes.