

## 226 Tortoise Nutrition

### Water

Water is an extremely important, essential nutrient. The majority of a tortoise's water requirement may be provided in the food that they eat, but a supply of fresh clean water should also be available at all times, and for tortoises it can be provided in shallow bowls which they can also lie in.

### Energy

The main sources of energy in a tortoise's diet are

- fats (30-60% of requirement)
- proteins (25-60% of requirement)
- carbohydrate (55-75% of requirement)
- protein (15-35% of requirement)



### Fats

Fats are an important source of energy - especially for carnivorous species of reptile, and they also provide essential fatty acids which are important as :

- Constituents of cell walls, and for
- Normal skin function

In addition, fats carry with them fat-soluble vitamins such as vitamin A, D and E.

Excessive fat intake (especially polyunsaturated fatty acid sources such as cod liver oil, and fatty fishes) can be harmful and cause a serious disease called steatitis.

The precise nutritional requirement for fats for tortoises and turtles has not been established.

### Carbohydrates

Carbohydrates are an important source of energy for tortoises and turtles. They are present in foods as simple sugars, and also as complex carbohydrates which are part of the group of food ingredients called "dietary fibre".

### Fibre

The natural diet of tortoises and turtles is relatively high in fibre content. Although a useful nutrient for tortoises and turtles, excess fibre intake can lead to distension of the gastrointestinal tract - bloat.

### Minerals

Mineral concentrations are relatively low in plants, and some observers suggest that

tortoises obtain their mineral requirement by eating soil or small stones in their environment. Insufficient amounts of calcium, or excessive amounts of phosphorus in the diet lead to a condition called nutritional secondary hyperparathyroidism. This results in bone being demineralised and weakened. These bones may bend or fracture. In addition the shell, plastron and carapace may become deformed giving the tortoise a spherical or pyramid appearance. Other signs include lameness and difficulty moving around.

### Iodine

Iodine deficiency is reported to be common in tortoises, which results in inadequate amounts of thyroid hormone being produced. This condition is seen most often in Giant Land Tortoises which have a high requirement for iodine and also in reptiles fed high quantities of brassica plants (a group of plants which includes cabbage, cauliflower, kale, rape, swede, turnip, Brussels sprouts, and broccoli).

### Sodium

Reptiles are extremely good at regulating their body sodium. Sodium is present in most feedstuffs, and as a result sodium supplementation is only required when marine reptiles are being kept in a fresh water environment.



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### Knowledge Questions

1. What do Tortoises use shallow bowls of water for?
2. What are the energy requirements for a tortoise in percentages?  
Fats  
Proteins  
Carbohydrate  
Protein
3. What serious disease can be caused by excessive fat intake?
4. What can excess fibre intake lead to?
5. Where can tortoises get their mineral requirements naturally from?
6. What is the cause of inadequate amounts of thyroid hormone being produced?
7. When is sodium supplementation required?