

SOURCES AND FUNCTIONS OF FOOD NUTRIENTS

The components of feed that are absorbed and utilized in the bodies of animals after digestion are known as nutrients.

There are six classes of food nutrients which are needed by farm animals for growth and proper development these are

carbohydrate

protein

fat and oil

minerals

vitamins

water

CARBOHYDRATE

This is made up of carbon, hydrogen and oxygen combined in such a way that there are always twice as many atoms of hydrogen as there are of oxygen. They are energy producers. Carbohydrates are usually grouped into two namely sugars and non-sugar. Examples of sugar include glucose, fructose, sucrose, maltose, lactose and raffinose

The non-sugars include polysaccharides such as starch glycogen, cellulose dextrins and complex carbohydrates such as lignin is not a true carbohydrate.

SOURCES

Cereal grains like maize guinea corn, millet, rice and wheat spent grains.

Root and tuber crops like cassava, yam, and potatoes cocoyam

Grasses and forages hay, silage molasses, plantain.

The cellulose and hemicellulose which are non – sugar constitute the main carbohydrate in grasses and forages. The hemicellulose and cellulose cannot be broken by digestive enzymes but are degraded by the micro – organisms e.g bacteria and protozoa; in the rumen, reticulum and caecum of ruminants.

FUNCTIONS

Carbohydrates are broken down to release energy for muscular work, growth, reproduction and milk production. They are used for fattening or building up of fat in animals.

They form part of essential materials in the body milk (lactose) brain cerebro sides and cartilage (micro-polysaccharides). The body temperature of animals is partly maintained through the conversion of the chemical energy in carbohydrate into heat.

Deficiency Symptoms

Emaciation (ii) General weakness.

2. PROTEIN: These are complex nitrogenous compounds made up of carbon hydrogen oxygen and nitrogen. Some may contain small quantities of sulphur phosphorous and iron. Protein on hydrolysis, yield or broken down into smaller absorbable unit called amino acid. Some amino acids are regarded as essential because they must be supplied to the animals ration.

These includes:

Tryptophan

Histidine

Methionine

Arginine

Theonine

Leucine

Isoleucine

Valine

Lysine

Pheny – alanine.

These are called essential amino acid. These amino acids cannot be synthesized by non-ruminant animal or produce at an adequate rate for growth or reproduction.

They have to be supplied in the diet for these animals. The non-essential amino acids are those that non-ruminants can synthesize in adequate amounts from other nitrogenous sources and therefore need no dietary supplementation

The non-essential amino acid includes:

aspartic acid

protein

serine

citrulline,
glutamic acid,
tyrosine,
Glycine
Hydroxproline
cysteine
alanine etc.

In ruminant animals e.g cattle sheep and goat, the issue of essential or non – essential amino acids does not arise because they can synthesis the amino acids from both nitrogenous and non-nitrogenous source including the microbes in their rumen

SOURCES

Sources can be grouped into 3:

Plant Protein

Toasted soya bean seeds or full fats soya (b) soya bean meal (c) palm kernel cake / meal (d) groundnut cake / meal (e) cashew nut meal (f) cotton seed meal (g) sun flower seed meal (h) leguminous forage – centrosemastylsanthes

Animal Protein

Sources of animal protein: these include fish meal, blood meal, meat meal and milk, feather meal, poultry offals, termites insects and earth worms.

Synthetic Proteins

Methione, lusine, cystine

FUNCTIONS OF PROTEIN

They are vital for the growth of young animals

Protein helps in repairing worn out tissues or cells.

They help in the synthesis of enzymes and hormones.

It is important in pregnant animals for building the foetus

It can become a source of energy in the absence of carbohydrate and fats.

It is the raw materials for building protective covers e.g hairs, nails feathers wool horns and hooves.

They are responsible for flesh build up

It produces milk for lactating animals.