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**COURSE TITLE: INTRODUCTION TO HUMAN NUTRITION AND DIETETICS.**

**ASSIGNMENT**

Write 10 names of scientists that contributed to the development of nutrition and what they did.

**ANSWERS**

1. **FRANCOIS MAGENDIE**

He was a French pioneer who practiced surgery but later changed to physiology. In 1816, in Paris, he conducted an experiment to check whether animals could use atmospheric nitrogen to “animalize” ingested foods of low nitrogen content. In his experiment, he took a single food that was accepted as being “nutritious” even though it did not contain nitrogen, and fed it to dogs, a species that would eat both plant and animal foods.

Sugar was the food that he tested with his first dog. It continued to eat well for about 2 weeks, but began to lose weight and develop a corneal ulcer. After a month, it died. He repeated the experiment, and then tried using olive oil, gum or butter as the sole foods for his dogs, in each case with the same result, except that no ulceration was seen in the dog receiving olive oil.

His conclusions were that none of those foods was “preeminently nutritive” (providing all the dog’s needs), even though they were all absorbed, and, second, that at least the majority of the nitrogen in a dog’s tissue must come from food that it has consumed. In his 1816 paper he had written: “Everyone knows that dogs can live very well on bread alone”, but later, when he actually put this to the test he found that “a dog does not live above fifty days”. His final conclusion still echoed in present day dietary guidelines, was that “diversity and multiplicity of aliments is an important rule of hygiene; which is moreover, indicated to us by our instincts”.

1. **WILLIAM BEAUMONT**

In 1823, a U.S Army surgeon, William Beaumont, had the opportunity to become a pioneering physiologist. At a remote trading post a young man was accidentally shot in the stomach and the wound left a permanent fistula through which food samples could be removed and introduced. Because the victim was destitute, Beaumont took him into his house and used him as a subject intermittently for almost 10 years. He observed that the gastric juice, which always contained hydrochloric acid, was secreted only in response to eating. He also saw that oily food was only slowly digested, but it was speeded by “minuteness of division”.

At that time, the stomach was thought of as the major site of digestion.

1. **CLAUDE BERNARD**

In the 1850s Claude Bernard discovered that the secretions into the small intestine from the pancreas, together with the emulsifying effect of the bile, were of the greatest importance for the digestion of fat into glycerol and free fatty acids, and its absorption.

1. **H.M EVANS AND KATHARINE BISHOP**

In 1922, H.M Evans and Katharine Bishop working at a bakery found that a purified diet with vitamin supplements that supported good growth in female rats nevertheless failed to support normal reproduction; the embryos were being resorbed before the end of pregnancy. Lettuce was the first food found to prevent this problem, but then wheat and in particular wheat germ oil. Cod liver oil seemed unexpectedly to increase the problem. The active factor was named “Vitamin E’ and following further investigations by many groups, it was isolated in 193 and named “Tocopherol” (from Greek terms signifying “the childbirth-producing alcohol).

1. **HENRIK DAM**

Henrik Dam was a Danish worker who discovered in 1935 that the deficiency that was causing hemorrhaging in chicks, which responded to dosing with cabbage, was another disease that was thought to be Vitamin E, was actually a new fat-soluble vitamin, which he named Vitamin K in recognition of its essential role in blood coagulation (‘Koagulation” in Danish and German). It was discovered to occur naturally in modified forms in many plants and to be produced by bacterial growth in stored animal product. The vitamin also cured the hemorrhaging of patients with obstructive jaundice who lacked bile to aid absorption of the vitamin and of cattle that had been eating sweet clover hay that contained anti-vitamin.

1. **GEORGE AND MILDRED BURR**

In 1922, George and Mildred Burr, in the University of Minnesota fed rats with a diet that was completely free from fat using sucrose instead of corn starch and adding Vitamin A and D by saponifying cod liver oil and adding only the non-saponifiable fraction. They found out that rats fed such diets for many months failed to reach their normal mature weight; they also lost fur and their tails became inflamed and scaly. In the following year, they found that giving the animals small quantities of methyl linoleate, but not butterfat, prevented the condition. Much more were discovered later about the functions of polyunsaturated fatty acids.

1. **DENIS BURKITT**

In 1969, Denis Burkitt pointed out that cancer of the colon and rectum among 34-64 year old men was 10 times as frequent in Connecticut as it was in East Africa, and intermediate in Puerto Rico and most Asian countries. He commented, “bowel cancer and other non-infective diseases of the bowel are rare in every community examined which exists on high residue diet has been adopted. It seems likely that carcinogens produced by the action of an abnormal bowel flora, when held for a prolonged period in contact with the bowel mucosa, may account for the high incidence of these diseases.

1. **HUGH TROWELL**

In 1972, Hugh Trowell suggested that it was a higher intake of dietary fiber that also helped to protect people in less developed countries from colon cancer and other intestinal diseases. There was an increased interest in the possible role of fiber in the diet, but it was also realized how heterogeneous it was and difficult to define. In addition, people who obtained more fiber by eating more fruit and vegetables tended to do so at the expense of foods richer in proteins and fats.

1. **BOUSSIN-GAULT**

Iron deficiency anaemia, the most commonly occurring type of anaemia in many parts of the world was described in 17th century as “green sickness” and was treated either with herbs or iron preparations. There was also an outbreak of goiter in communities in Andes and Boussin-Gault’s recommendation in 1833 that salt containing iodine should be used in the treatment of this disease. He later discovered that the difference between goitrous and non-goitrous communities in Andes was related to the iodine content of the salt they used.

1. **HARRIETTE CHICK AND E.M HUME**

They were the first independent women scientists to be mentioned in history. They were able to demonstrate that cow’s milk had only a low antiscorbutic activity; guinea pigs receiving an “oats + milk” diet needed some 50 ml per day to remain healthy and if the milk went sour they would not touch it. It was essential therefore to monitor individual consumption in order to interpret the results. Scurvy consistently appeared with autoclaved milk that had apparently lost most of its vitamin C activity.

Because of suspicions that commercial lime juice was not an effective anti-scorbutic, they now used guinea pigs to test this in what may have been the first bioassay for vitamin activity. They found that commercial lime juices had less than one tenth the activity of freshly squeezed lemon juice. The processing almost certainly included pumping through copper pipes and probably some form of sterilization. This of course confirmed that Victorians had been correct to doubt that lime juice as they knew it was effective in preventing outbreaks of scurvy on the long expeditions.