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ALOE VERA
INFORMATION SERVICES

ALOE VERA

Aloe Vera and Diabetes

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Aloe Vera, in various forms, has been applied to the treatment of diabetes of animals and humans in a few small scale trials and one larger trial. The results indicate that Aloe has a hypoglycaemic effect (i.e. a blood sugar lowering effect), and other effects, sufficient to make it extremely interesting for possible wide-scale use in the treatment of diabetic conditions. The nature and implications of these findings are discussed in this newsletter.

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ALOE VERA AND DIABETES

The diabetes being referred to in this Newsletter is Diabetes Mellitus, otherwise known as "sugar diabetes", because an inevitable aspect of it is a blood sugar level far higher than normal, with glucose appearing in the urine. The name "Mellitus" refers to the sweet taste of the patient's urine on account of its glucose content. It has nothing to do with Diabetes Insipidus, which is a disorder of the Posterior Pituitary Gland. Diabetes Mellitus is due either to a failure of insulin production in the Islets of Langerhans in the pancreas or to a condition of the tissue cells known as "insulin resistance". In some cases there is a combination of these two conditions.

There are two rather distinct versions of Diabetes Mellitus, differing in respect of their patterns of inheritance, insulin responses and origins. These distinctions were drawn up by the National Diabetes Data Group of the National Institutes of Health in the USA and are called "Insulin Dependent Diabetes Mellitus", which used to be called "Juvenile Onset Diabetes Mellitus" and "Noninsulin Dependent Diabetes Mellitus", which used to be referred to as "Adult Onset Diabetes Mellitus. The nature of these two conditions and the distinctions between them are discussed below.

The Normal Action of Insulin

Insulin is a hormone produced from the "Endocrine Pancreas", i.e. that part of the pancreas which is concerned with hormone production (the Islets of Langerhans, Figure 1 & 2) as opposed to the part of the pancreas which produces digestive juices. Its chemical nature is a polypeptide / small protein molecule containing 51 amino acid residues. Its formula is given in Figure 3. To understand this structure it is necessary to know that each of the amino acid residues is referred to in an abbreviated form consisting of the first three letters of the name of the corresponding amino acid.

It is most important to appreciate the actions exerted by insulin in the normal human body. These are to stimulate ;

- Transmembrane transport of glucose and amino acids (transport into cells - increased rates of glucose oxidation usually result)
- Glycogen formation in liver and skeletal muscles
- Glucose conversion to triglycerides
- Nucleic acid synthesis, promoting growth and differentiation
- Protein synthesis

These actions make insulin "a major anabolic hormone". The term "anabolic" means favouring the building up of cellular constituents from simpler substances. Any substance which encourages the reverse process is referred to as being "catabolic".

The combined effects upon blood glucose level of insulin secretion is to reduce it. Injection of excess insulin is therefore capable of producing dangerously low blood sugar levels. The normal human body depends upon a "trickle" of insulin coming from the pancreas to control the level of glucose in the blood, but larger quantities are produced in response to eating sugar or sugary foods. The effect upon body glucose of a pulse of insulin released from the pancreas is to strongly encourage the clearing of glucose out of the blood by tissue oxidation, by conversion to stored

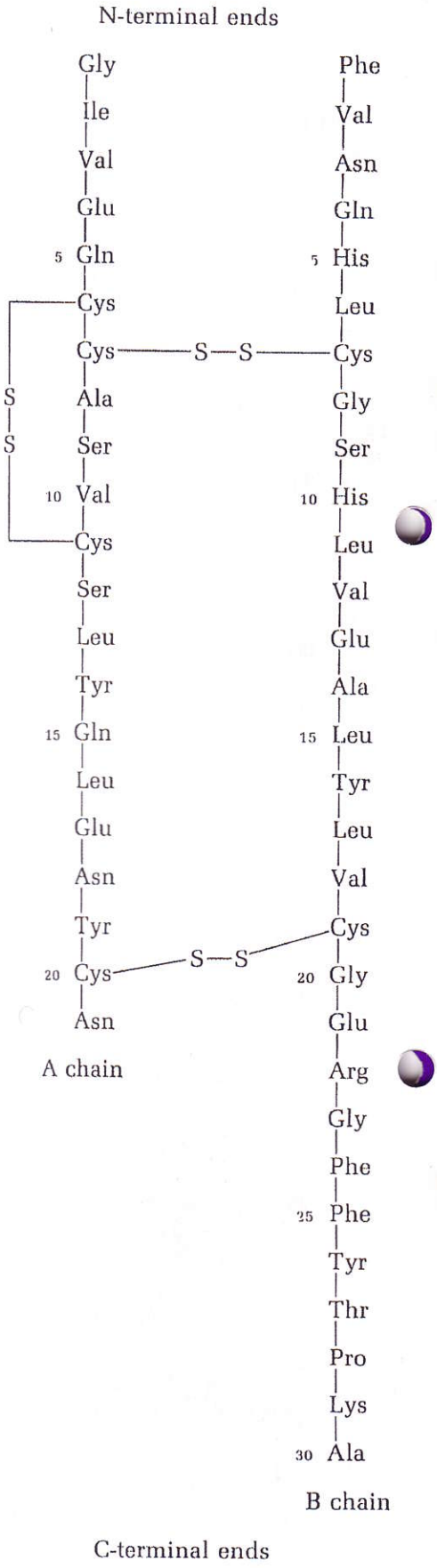
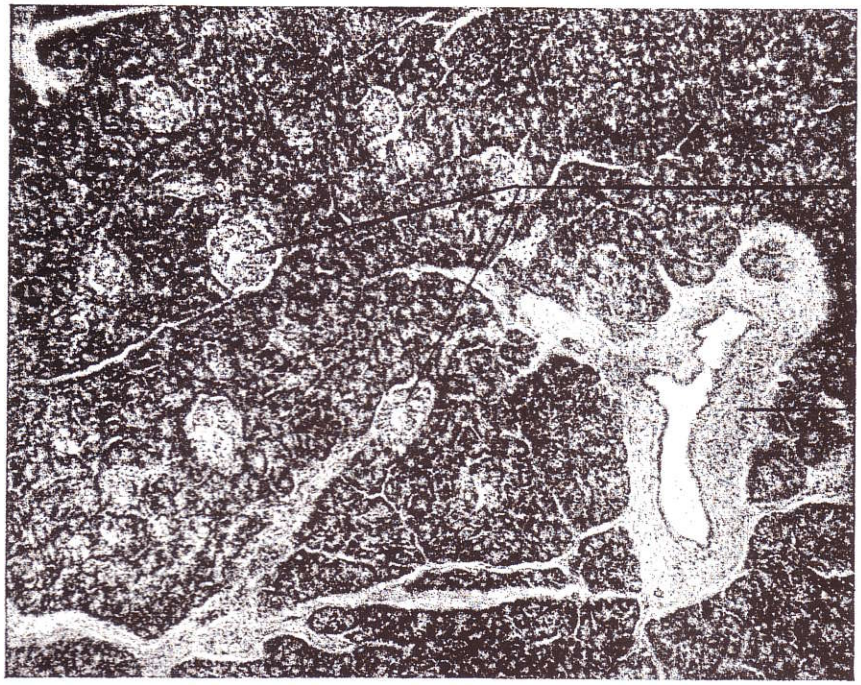


Figure 1 *A microscopic view of a section of pancreas showing the Islets of Langerhans clearly demarcated. These contain the beta cells which produce insulin.*



glycogen and by conversion to fat. At the same time the formation of "new glucose" from protein (a process referred to as "gluconeogenesis") is inhibited, an action which also tends to reduce the blood sugar level. In the normal body insulin in the blood is balanced by another hormone from the pancreas, called "glucagon", which exerts a largely opposite action. The normal balance of body glucose is therefore achieved by the appropriate regulation of these two hormones.

Figure 2 *The chemical formula of the hormone insulin, showing its two peptide chains, designated A and B, linked by disulphide bridges.*

The actions of insulin (and related substances called insulin-like growth factors) are exerted most particularly upon muscle cells, including heart muscle cells, fibroblasts and fat cells, which represent collectively about two thirds of the entire body weight. The effects of a lack of insulin are best seen in the symptoms of Insulin Dependent Diabetes Mellitus, described below.

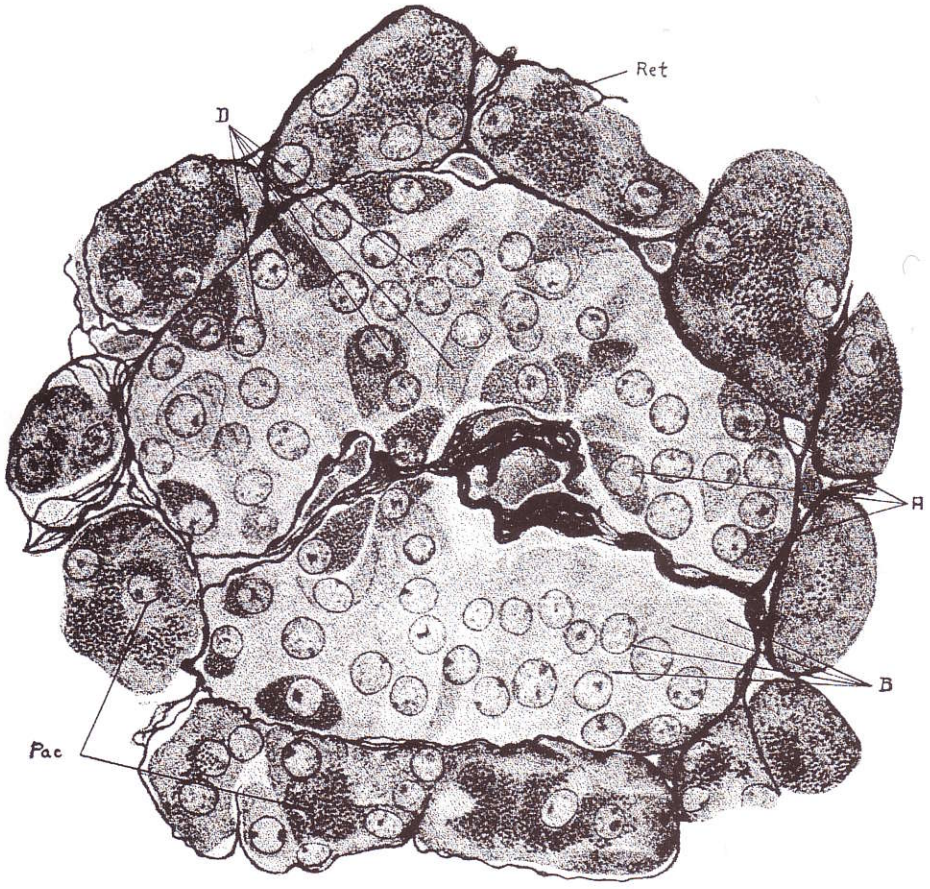


Figure 3 *A microscopic view of a section of pancreas in greater magnification than Figure 2, showing a single Islet of Langerhans in detail.*

The Deep Philosophical Divide over the Treatment Approach to Diabetes

Ever since the discovery of the hormone Insulin by Banting and Best in 1922 there has been a polarization of views about the best ways to treat Diabetes Mellitus between the orthodoxy and Alternative Practitioners. The immediacy of the need for treatment of diabetic patients at risk of their lives, as well as the power of orthodoxy, ensured that the orthodox view, which has always consisted in the administration of insulin, held sway. Naturally once the hormone was known and means were available for its production, it was an easy and obvious way to overcome the immediate symptoms of diabetes to give the patient regular doses of the hormone they were known to be lacking.