



DEGENERATIVE DISEASES AND FIBRE

S.M.Prasad¹, CissieTheeblyn David², Riji Madhusudhanan³

1 Assistant Professor, Department of Nutrition and Dietetics, SadakathullahAppaCollege (Autonomous), Rahmath Nagar, Tirunelveli-627 011, Tamil Nadu, India.

2 Assistant Professor, Department of Food Science and Nutrition, ICAR-KrishiVigyan Kendra, Tirupathisaram, Kanyakumari District- 629 901, Tamil Nadu, India

3 Dietitian, Centre for Physical Education, University of Calicut (Main Campus), Malappuram District -673 635, Kerala, India

INTRODUCTION:

The population of India has an increased susceptibility of diabetes in developing countries is closely associated with industrialization and socio economic development (Paris, 2002). Diabetes Mellitus is the third leading cause of death (after heart disease and Cancer) in many developed countries. It affects about 2 to 30 per cent of the general population. The complications of diabetes affect the eye, kidney and nervous system (Satyanarayana, 2010).

Diabetes the Latin word means “Flow through” and Mellitus means “Honey” and clinically it is manifested by the overflow of sugar or glucose in the blood and urine instead of getting converted in to glycogen (Begum, 2006). Diabetes is not just a disease involving sugar and cutting out sugar from the diet. It is about adding foods to the diet that will help control blood glucose levels (Bailliers, 2004).

Causes of diabetes are heredity, age, sex, obesity and sex (Swaminathan, 2006). Diabetes is characterized by polyuria, polydipsia and polyphagia (Darshan, 2010). Untreated diabetes exhibits the following symptoms polyuria, polydipsia and polyphagia (Shanmugam, 1998) any disorder of metabolism causing excessive thirst and the production of large volume of urine (Harrison, 2000)

The best way to prevent type 2 diabetes is to avoid gaining weight. Overweight people are four times more likely to develop type 2 diabetes than those who maintain normal body weight (Michael, 2010). Today obesity is the most common factor of malnutrition and is a factor in the two major causes of death, heart diseases and cancers. So any food that helps people limit calories is desirable.



Type 2 diabetes is more commonly seen in persons above 40 years. In this type, the defect is lack of insulin action and not production of insulin. Blood often contains normal levels of insulin. This defect is due to decrease in the number of target cell insulin receptors and lack of sensitivity to insulin. Type 2 diabetic patients are normally obese (Prasad, 2011).

Western data suggests that Indians are more centrally obese at a given level of BMI compared to Americans and that Indians are more insulin resistant even at lower levels of BMI (Srilakshmi, 2003). Type 2 diabetes accounts for 90 to 95 per cent of the total diabetes population in the United States and is the sixth leading cause of death in America (Paula, 2010).

Almost every one hears about the need for enough fibre in the diet. But few people understand the importance of dietary fibre-or where to get in only plants produce fibre no matter how chewy or “tough” animal products may be they do not contain fibre not even bones or egg shell. The understanding that fibre is good for us is relatively new until 1970; Fibre was regarded at best at worst, as a hindrance to good nutrition.

The word fiber (North American) can also be spelled fibre (British). It comes from the Latin word *fibra*, meaning fiber, thread, string, filament, entrails. Low fibre diets have been reported to be associated with ischemic heart diseases, diabetes, cardio vascular diseases, cancer of the colon, etc. The incorporation of fibre in the diet improves the glucose tolerance in diabetic humans (Swaminathan, 2003).

OTHER NAME FOR FIBRE

Fibre is also called as “roughage” or cellulose

IDENTIFIED BY:-

It was a naval doctor, T.L.Cleave (1906-83) who sparked the great re-think out fibre. He argued that refined fibre-depleted carbohydrates are harmful in many ways. He was supported by a surgeon from East Africa called Denis Burkitt, who presented evidence that western diseases are rare in Africa and other third world countries where fibre intake is high.

DEFINITION:-

Fiber is defined as the part of plant cellulose made up of indigestible parts or compounds of plants, which pass relatively unchanged through our stomach and intestines.



TYPES OF FIBRE:-

Fibre is made up of non-starch polysaccharides, such as cellulose, dextrin, inulin, lignin, chitins, pectin, beta-glucans, waxes and oligosaccharides. The word fibre is misleading, because many types of dietary fibre are not fibre at all. There are two broad types of fibre, soluble and insoluble.

1. **Soluble fibre** dissolves in water. It changes as it goes through the digestive tract, where it is fermented by bacteria. As it absorbs water it becomes gelatinous. Soluble fibre is found mostly in Oats, Psyllium, Barley, Vegetables, Seed husks, lentils, beans, fruits and flax seed.
2. **Insoluble fibre** does not dissolve in water. As it goes through the digestive tract it does not change its form. Insoluble fibre is found mostly in wheat bran, wheat-based cereals and pasta, whole meal and whole grain bread.

FOODS-LOW IN FIBRE:-

Foods that are low in fibre include meat, animal products, refined cereals white bread, dairy products and fast foods.

ROLE OF FIBRE IN HUMAN HEALTH

Eating fibre rich foods can lower some are listed below

1. Prevent constipation
2. Regulate blood sugar level
3. Reduce the risk of gall stones and kidney stones
4. Prevent Heart Diseases
5. Inhibit Diverticular Diseases
6. Keeping weight in control
7. Forms bulk for food
8. Prevents obesity
9. Role in metabolism
10. Prevents cancer
11. Reduces blood cholesterol level

1. Prevent Constipation:-

Fibre prevents constipation by forming a mucilaginous like particles over hard stools and makes it easy for bowel excretion. Dietary fibre particularly insoluble fibre



helps prevent constipation by increasing stool weight and decreasing gut transit time. This effect is enhanced if parallel by an increase in water intake. The short chain fatty acid, produces when fibre is fermented by gut bacteria, is an important source of energy for colon cells and might inhibit growth and proliferation of gut tumor cells.

2. Regular Blood Sugar Level (Diabetes):-

Adding fibre to the diet helps in regulating blood sugar levels. Fibre slows digestion and absorption, so that glucose stream more slowly, which keeps blood sugar on a more even level. They slow down glucose absorption

3. Reduce the Risk of Gall Stones and Kidney Stones:-

Fibre reduces the risk of gall stones and kidney stones.

4. Prevent Heart Diseases:-

Foods containing soluble fibre such as oats, rye, barley and beans can have a positive influence on cholesterol, triglycerides. Some fruits and vegetables (such as citrus fruits and carrots) have been shown to have the same effect.

5. Inhibit Diverticular Diseases:-

Diverticular disease is a condition in which small pouches develop in the wall of colon. Eating fibre rich foods may relieve from this condition.

6. Keeping Weight in Control:-

Foods containing plenty of fibre have more bulk than low-fibre foods. If taken in the right format the right time and at sufficient quantities. Fibre can sometimes slow the onset of hunger. Fibre stays in the stomach longer than other foods; feeling of fullness will stay with you much longer. High fibre foods such as fruits and vegetables tend to be low in calories, so adding fibre to your diet; it is easier to cut calories.

7. Forms Bulk For Food:-

Fibre makes food more satisfying, probably because the contents of the stomach are bulkier and stay there longer.

8. Prevents Obesity:-

Fibre demands that food be more thoroughly chewed, fibre slows down the eating process and helps contribute to a feeling of being full, which in turn, can help prevent obesity from over eating.



9. Role In Metabolism:-

Fibre is broken down in the colon, at this time simple organic acids are produced. Acids produced help to non-risk the lining of the colon. These acids also provide fuel for the rest of the body, especially the liver and may have an important role in metabolism.

10. Prevent Cancer:-

The passage of food through the body is speed up, when fibre is eaten. It may prevent some harmful substances in foods; from affecting the colon, and protectus from some cancers like breast cancer, ovarian cancer, and uterine cancer.

11. Reduces blood cholesterol level

Isolated fibre such as pectin, rice bran, or oats bran lowers both serum cholesterol and low density lipoprotein (LDL, or bad) cholesterol levels, at the same time, researches show the diets high in a mix of dietary fibers also protects against CHD

CONCLUSION:-

Thus fibre with effective cunning properties is applied in many developing disease and its effect has been reduced. So, taking fibre rich foods were recommended for an individual every day to keep a sound healthy body. In order to have all the benefits of fibre, it is important to include a variety of sources of fibre in the diet. Diet with fruits adds vegetables; lentils, beans and whole grains not only provide dietary fibre, but as well many other nutrients and food components essential to good health.

BIBLIOGRAPHY

1. Bailliere's, 2004. *Nurses Dictionary for nurses and Health care workers*. p – 447.
2. DarshanSohi, 2010. *A Text Book of Nutrition PV Publications*. ISBN: 978 – 81 – 909385 – 6 – 3. p – 89.
3. Harrison L.M., 2000. *The pocket medical Dictionary*. CBS publishers, New Delhi. ISBN: 81 – 239 – 0926 – 8. p – 114.
4. Michael Zimmermann M.D., 2010. *Burgersteins Handbook of Nutrition*. Abbott Healthcare Pvt. Ltd., ISBN: 978 – 93 – 80378 – 09 – 1. p – 183.
5. Park. K. 2002. *Park's text Book on Preventive and social Medicine*. ISBN No. 81 – 901202 – 5 – 6. P – 294 – 295.
6. Paula Ford – Martin, Ian Bumer, 2010. *"The everything Diabetes Book"*. Viva Books private Limited. ISBN: 978 – 81 – 309 – 1480 – 0. p – 2.
7. Prasad, R.M., 2011. *Text Book of Nutrition and Biochemistry for B.Sc., Nursing Students*. Fourth Edition RM Publications Mangalore. p – 77.



8. Raheena Begum. M., 2006. *A Text Book of Foods, Nutrition and Dietetics*. Sterling Publishers Pvt. Ltd., New Delhi. ISBN: 81 – 207 – 09322. p – 275.
9. Randhawa, S.S., 2010. *A Text Book of Biochemistry* S.Vikas& CO Publishing House, Jalandhar. Third Edition. p – 377.
10. Satyanarayana U., Chakrapani. U., 2010. *Biochemistry*. Books and Allied (P) Ltd., Kolkata. ISBN No.: 81-87134-80-1. p – 668.
11. Shankuntala many. N., Shadaksharaswamy. M., 2007 *Foods Facts and Principles*. New age international Publishers.
12. Shubhangini A., Joshi, 2002. *Nutrition and Dietetic*. Second Edition. Tata MC Graw – Hill Publishing Company Limited. ISBN No.: 07 -047292 – 0. p - 237.
13. Srilaskmi. B, 2004. *Dietetics*. Fourth Edition. New age International Publishers. ISBN No. 81 – 224 – 1402 – 8. p – 253.
14. Sumati R. Mudambi, Shalini M. Ras, Rajagopal. M.V., 2003. *Food Science*. New age international publishers. ISBN No. 81 – 224 – 1779 – 5. p – 174.
15. Swaminathan 2006. “A hand book of Food and Nutrition”. The Bangalore Printing and Publishing co., LTD., p – 202.

