agMOOCs

Water Soluble Vitamins 1

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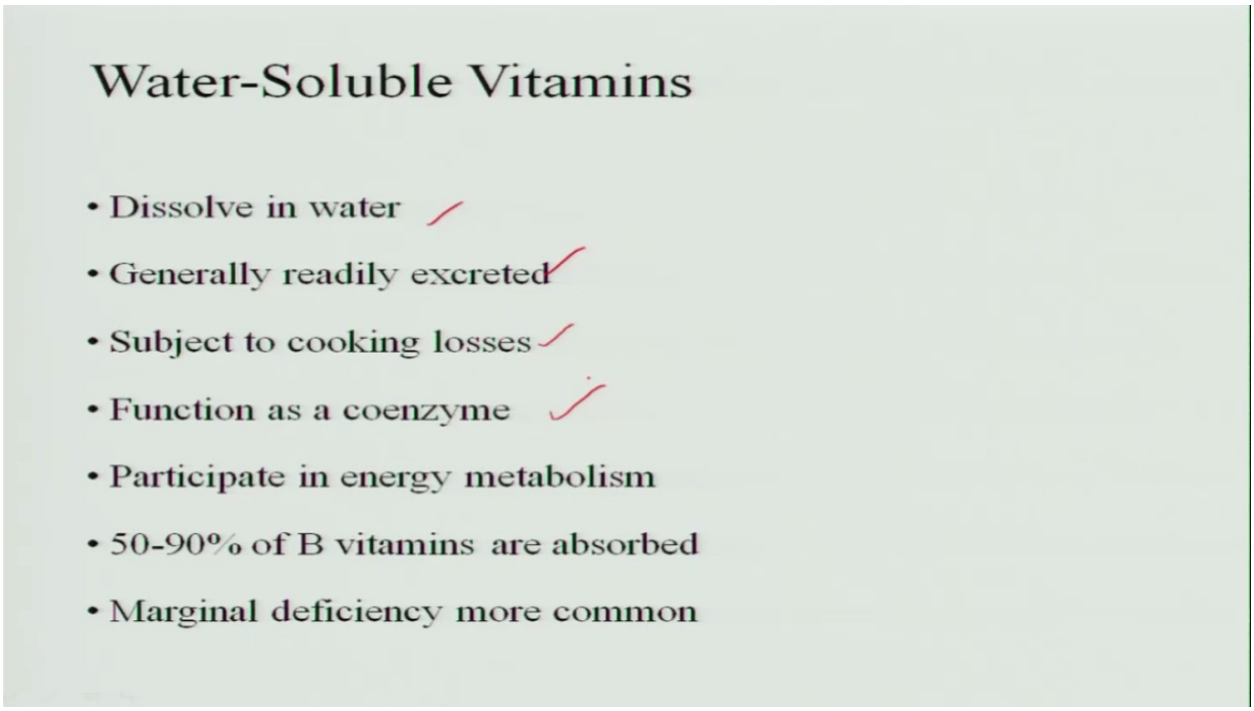
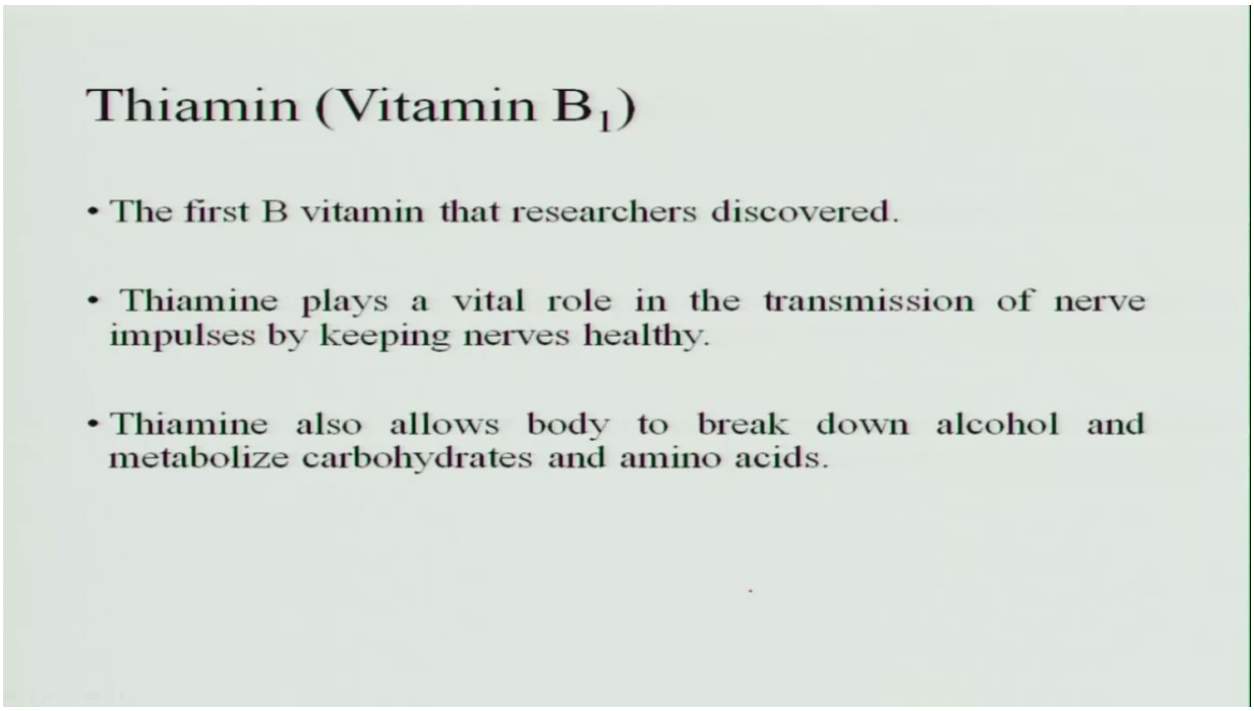
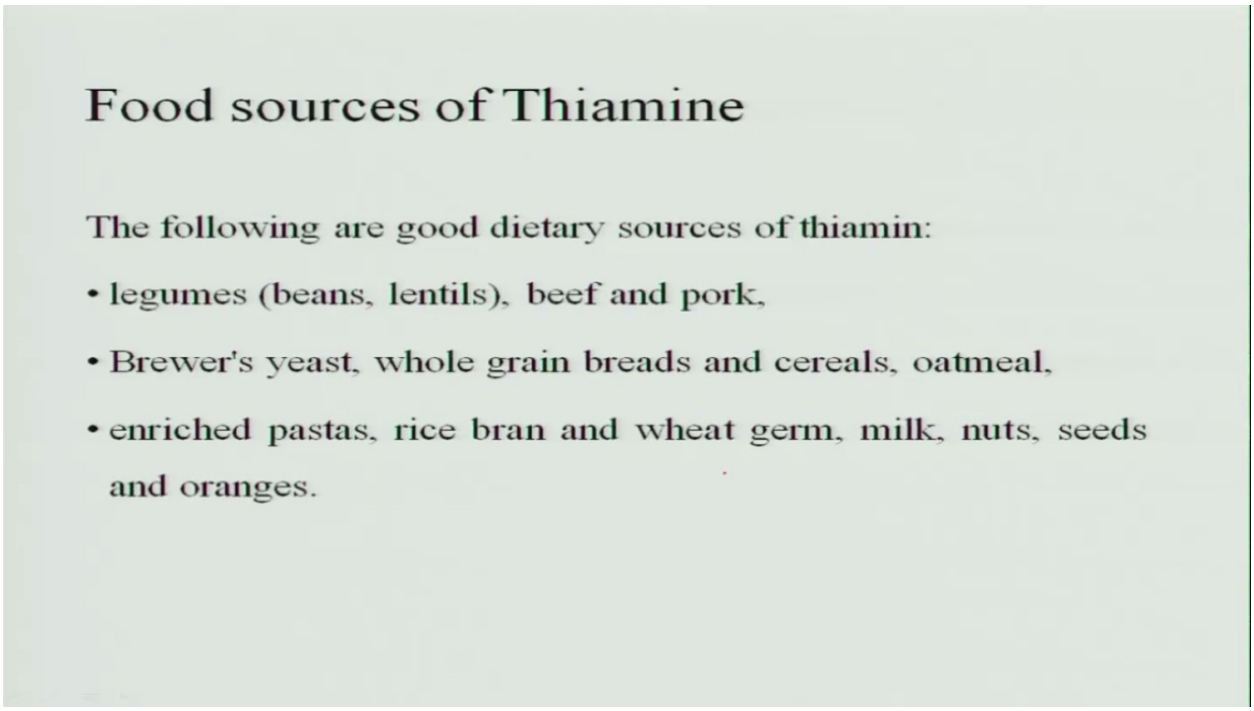
Last few classes we have seen the importance of fat soluble vitamins and we have seen in detail about vitamin A, D, E and K and what are their roles in the body and how they are got from the dietary sources and other sources and what are the effects of excess consumption and deficient consumption of these vitamins. Now let us move on to the water soluble vitamins. These are also vitamins but they are soluble in water and the excess will not be retained in the body.



So water soluble vitamins generally dissolve in water. They get readily excreted. So no storage of water soluble vitamin occurs. Then they are subjected to cooking losses. Very easily they are lost during the process of cooking and they function as co-enzymes in many metabolic reactions and participate in energy metabolism. Then 50 to 90% of B vitamins are absorbed. So generally there is no deficient. If you don't consume a balanced diet then only the deficiency of B vitamins occur. Then marginal deficiency is more common.

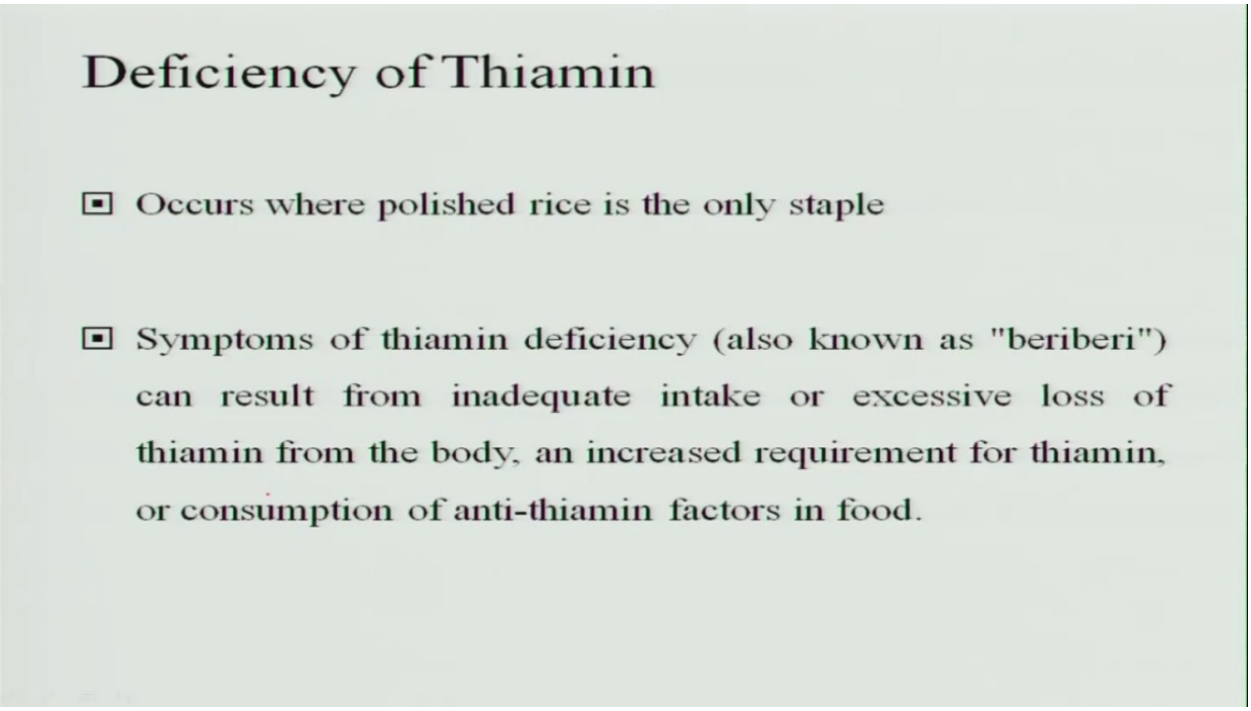


So the first vitamin among the water soluble vitamins is the Thiamine So this was the first vitamin that what the researchers discovered. Therefore today it is named as vitamin B1. So Thiamine plays a vital role in the transmission of nerve impulses by keeping the nerves healthy and it also allows the body to break down alcohol and metabolize carbohydrates and amino acids. So in the metabolism of carbohydrates and proteins Thiamine plays a very important role in the form of co-enzyme.

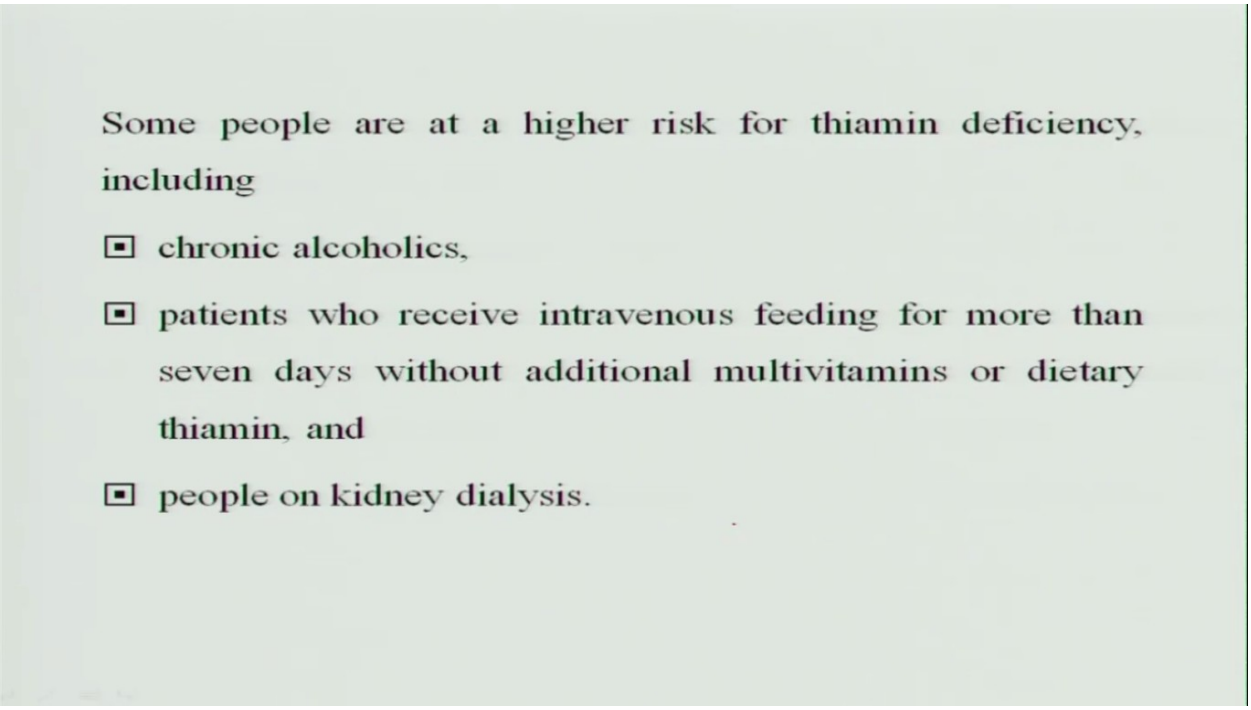


The food sources of Thiamine you have legumes as very good sources. Beef and pork. Then brewer's yeast, whole-grain breads, cereals, oatmeal, enriched pasta, rice bran, wheat germ, milk, nuts and seeds, and oranges. So all the grains which are eaten along with the outer cover or seed cover they have good Thiamine present in the food because the Thiamine is present in the outer layers of the grains. So when we consume highly polished rice we are losing the Thiamine in the rice. Therefore deficiency may occur.

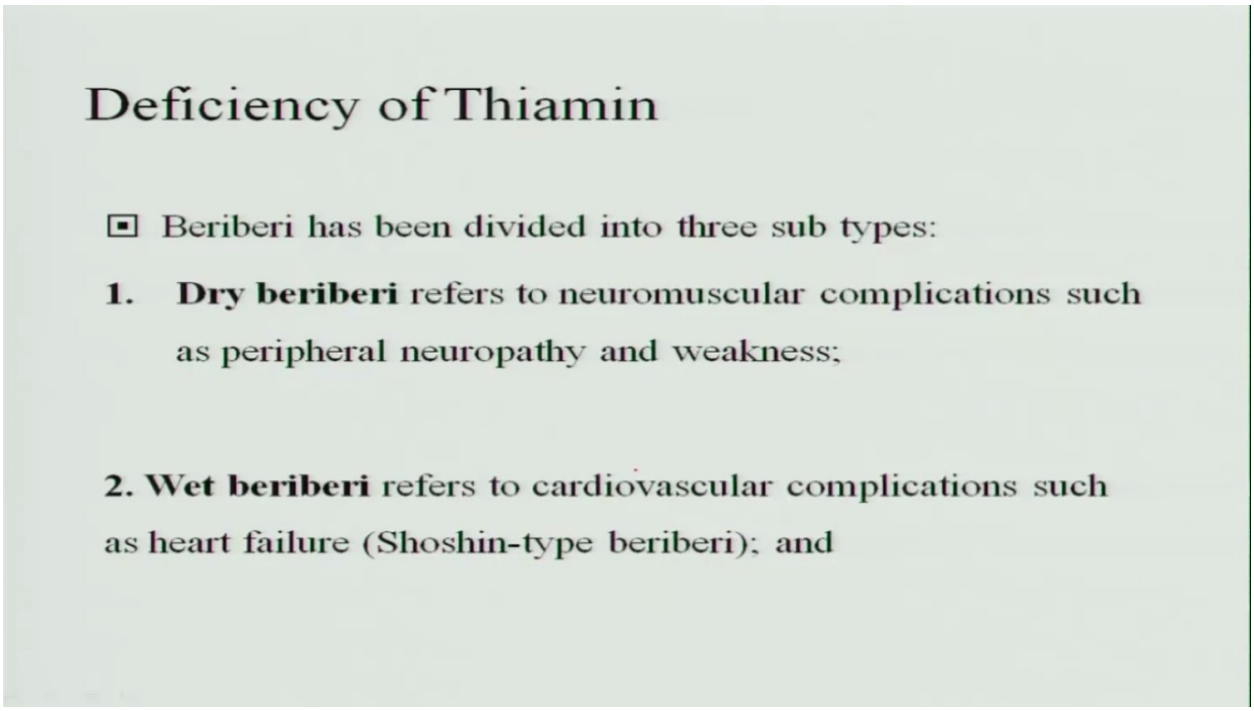
You can see the rich sources of Thiamine This can be consumed in your diet to reduce the Thiamine deficiency.



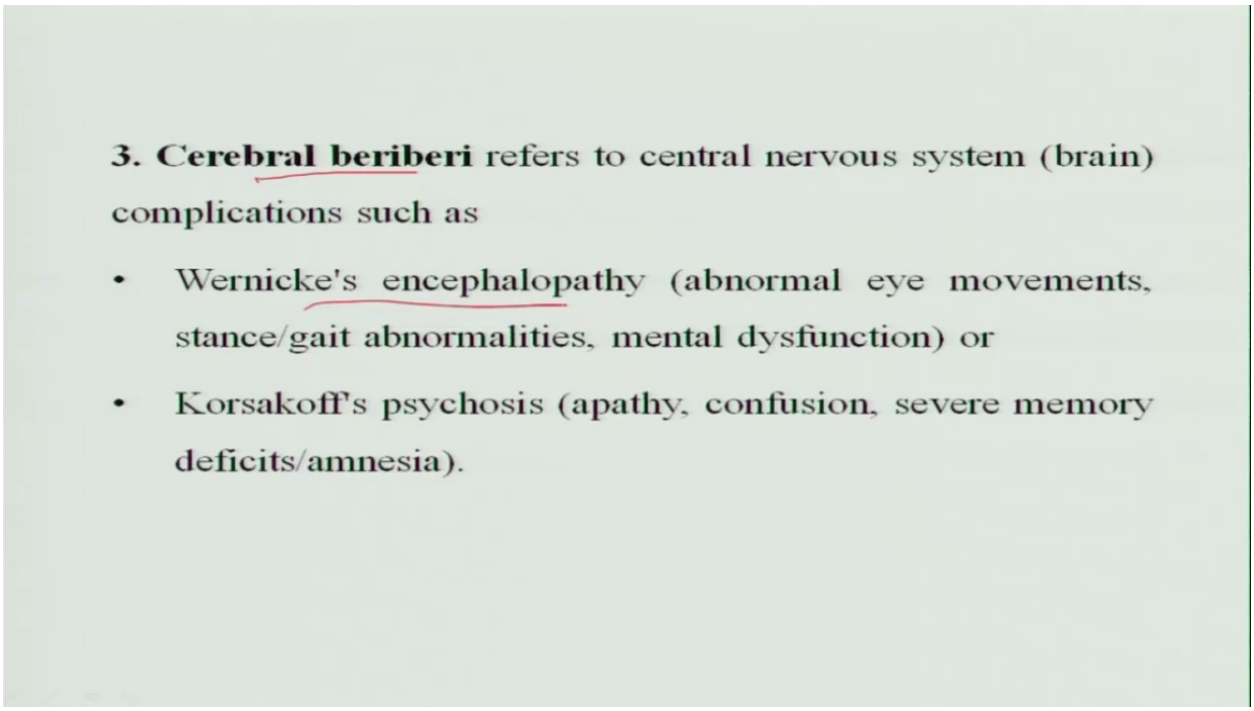
Now deficiency of Thiamine It occurs whenever the polished rice becomes the staple food of people. So people generally like rice and in a very white form. So when it is in the form along with the bran it is very difficult to consume for the people. Therefore wherever polished rice is consumed then the Thiamine deficiency occurs. So symptoms of time and deficiency is known as beriberi and it can result from inadequate intake of Thiamine or excessive loss of Thiamine from the body and there is an increased requirement of Thiamine so whenever there are anti-Thiamine factors present in the food especially the consumption of fish has an anti-Thiamine factor therefore Thiamine is not absorbed.



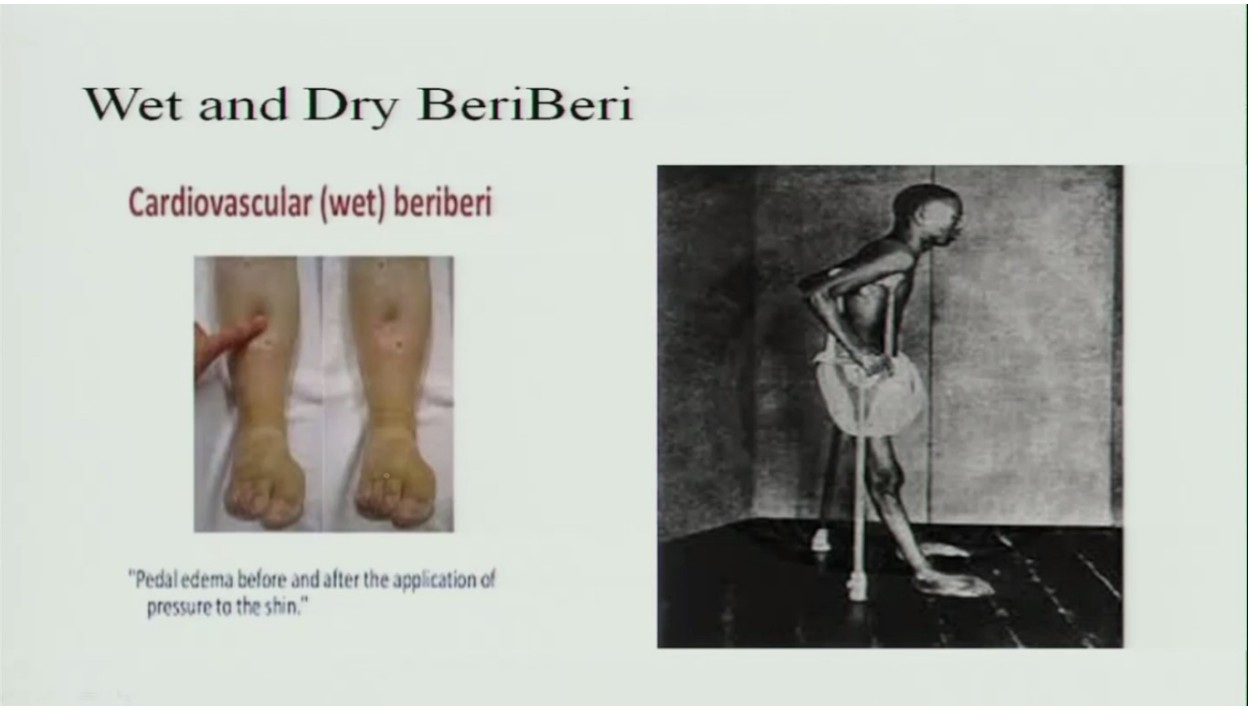
Some of the people are at higher risk for Thiamine deficiency including the chronic alcoholics. Then patients who receive intravenous feeding for more than seven days without any supplements. When they are just given the dextrose into the body they become deficient of Thiamine and people who undergo the dialysis they also suffer from the Thiamine deficiency.



Now what is the symptom of the deficiency of Thiamine? Beriberi can be divided into three subtypes. One is called as dry beriberi where the neuromuscular complications occur especially for the peripheral neuropathy or all the peripheral neurons are affected and there is weakness. Then wet beriberi is the second type where the cardiovascular system is involved and complications such as heart failure occur. There is edema in the body of the individual. This is the wet beriberi.



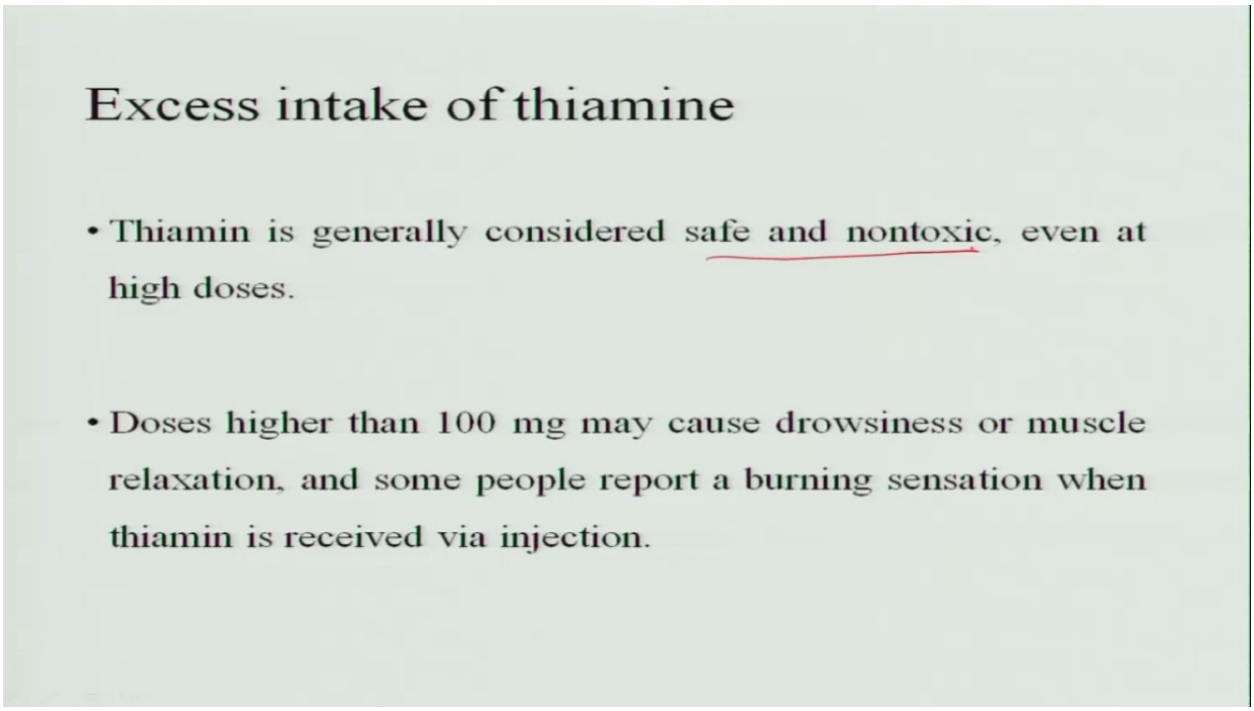
And the third type of beriberi is the cerebral beriberi where the brain is involved or the central nervous system is involved and it has complications like Wernicke's encephalopathy where there are abnormal eye movements. Then there are gait abnormalities. The person is not able to walk according to the right way he wants to walk. Then mental dysfunction, etc. Then there there is Korsakoff's psychosis where the individual suffers from apathy. There is lack of interest in the surroundings, confusion. Then there is severe memory deficit or amnesia.



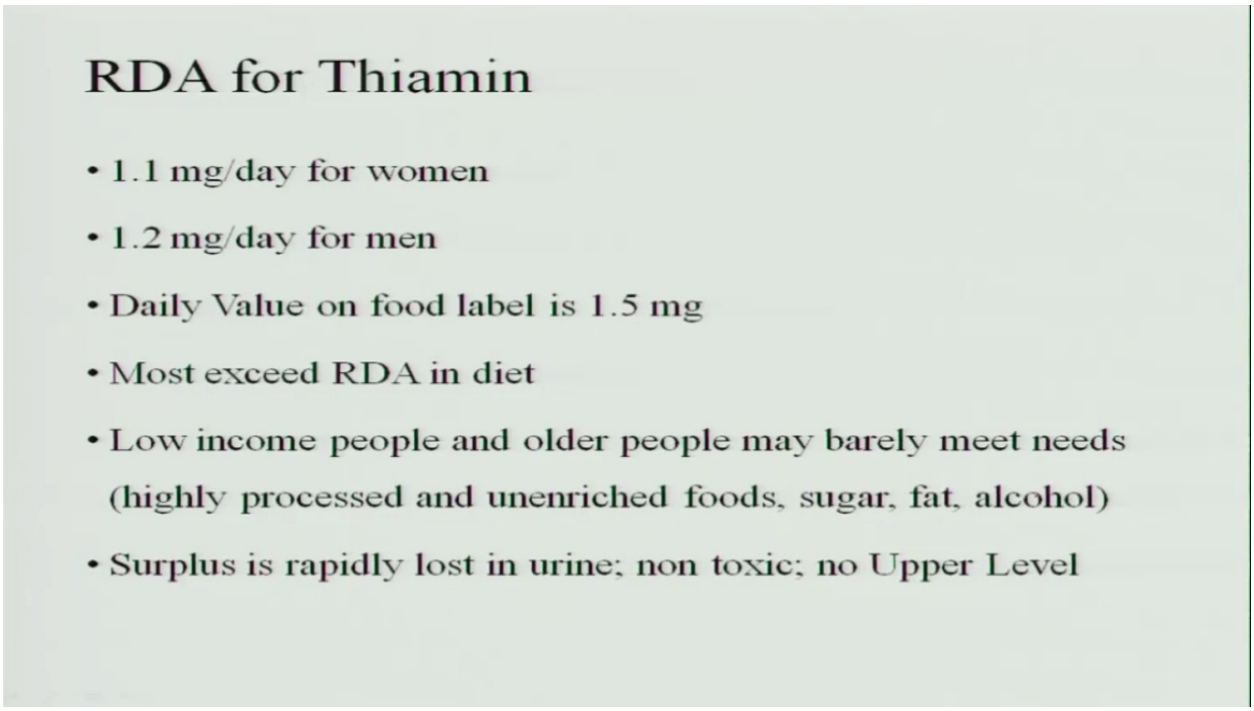
So this is how the wet and dry beriberi look like. You can see in the dry beriberi the person is not able to walk and he has to take the help of crutches because the peripheral nerves are affected whereas in the wet beriberi there is so much of edema you can see the pitting when it is pressed for a few seconds.

Now excess intake of vitamin B1 or Thiamine it is generally considered safe and non-toxic so even when you give high doses because excess is excreted but dose is more than 100 milligrams may cause drowsiness and muscle relaxation. So some people report a burning sensation when the Thiamine is received via injections.

Now recommended dietary elements of Thiamine Thiamine is a vitamin which is related to the energy metabolism. Therefore the requirement of thiamine depends upon the energy intake. So every 1000 kilocalories of the energy is related to the intake of Thiamine So according to that the recommendation of 1.1 milligrams per day for women is recommended and 1.2 milligrams for men and daily value of on an average should be 1.5 milligrams. So most of us exceed RDA in our diet except that low-income people and older people may barely meet the needs because the consumption of the staple food is more compared to the other foods in their life. I mean they do not take the proper balance that so and people who take highly processed and un-enriched foods sugar, fat, and alcohol also undergo the deficiency of Thiamine and surplus is rapidly lost in urine, non-toxic, and no upper level.



Now alcohol and Thiamine Why alcoholics are affected by Thiamine deficiency. So they are at great risk because the absorption and use of Thiamine is profoundly diminished when alcohol is consumed or the excretion is increased by the alcohol consumption. That is why the alcoholics undergo the efficiency of vitamin B1. Along with alcohol they also consume very low or poorer diet and very literally stored in the body. So alcoholic binge for one to two weeks if person continuously consumes alcohol for one to two weeks in large quantities he will definitely result in deficiency.



This is a small vitamin which is required in very small quantity that is 1.1 milligram per day but it causes so much of discomfort in the body and causes so many drastic symptoms involving the nervous system and the cardiovascular system making the person very weak, the Cerebral of beriberi which makes the brain weak and the person has symptoms of confusion, apathy, and amnesia. Therefore it is a very important nutrient which has to be included in the diet by giving the proper food sources.

Alcohol and Thiamin

- Alcoholics are at greatest risk for thiamin deficiency because absorption and use of thiamin are profoundly diminished and excretion is increased by alcohol consumption
- Poor quality diet makes it worse
- Little stored in body, so alcoholic binge of 1-2 weeks may result in deficiency

Thank you.