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TEB e.V. Selbsthilfe

Pancreatic tumours and Diseases

Nutrition concepts for pancreatic cancer

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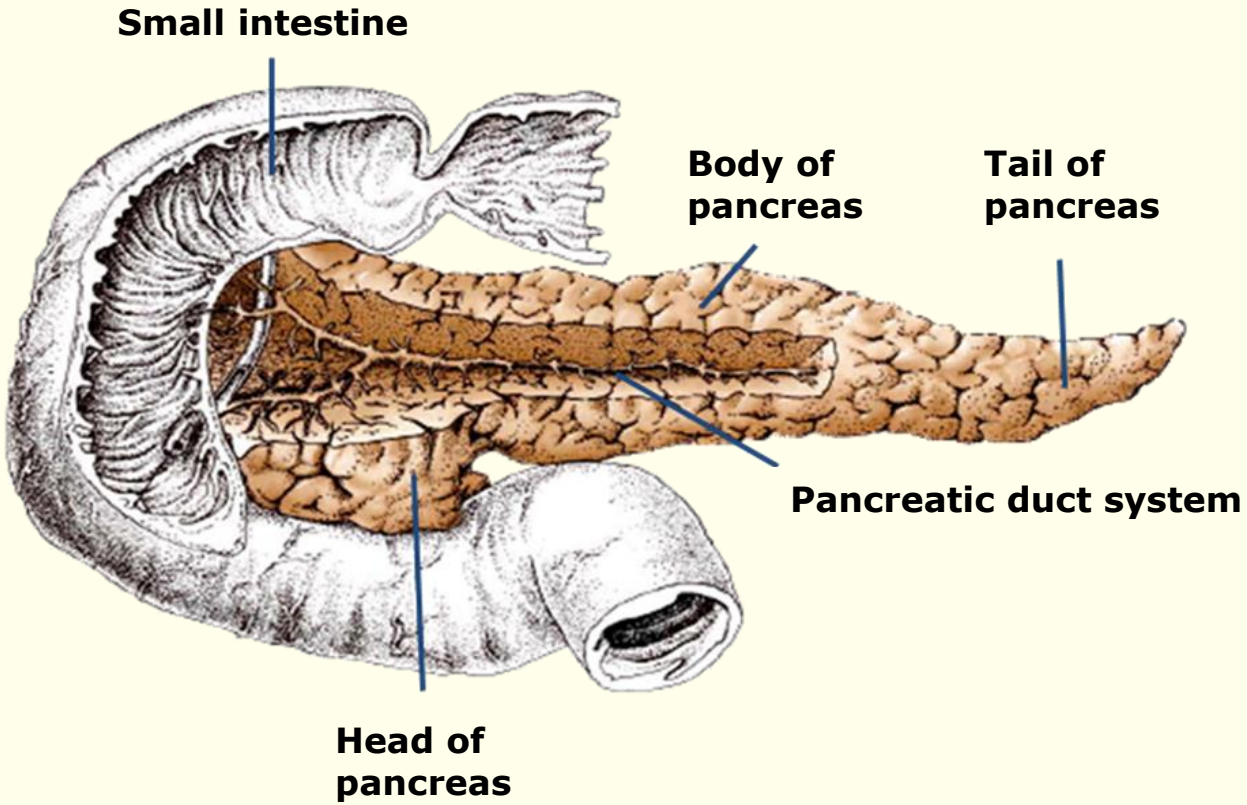
First chairwoman

Structure and function of the pancreas



The pancreas is the most important digestive organ. It transfers all important digestive enzymes into the duodenum.

Structure

- Main emphasis on
  - Pancreatic cancer – prior and after surgery

- Treatment of digestive disorders
  - Enzyme therapy
  - MCT fats
  - Complementary therapies

- Therapy for diabetes type 3c (pancreoprivic)

Nutritional therapy

For pancreatic cancer

- No particular diet – *you can eat whatever is easily digestible for you*
- Balanced, healthy nutrition
- Cover your energy needs: no fat reduction!
- Avoid weight loss

Nutritional therapy

For pancreatic cancer

- High-energy food
- Many small meals (8-10):
  - Increases energy intake
  - Makes meals more digestible
- Lack of appetite:
  - Juices, smoothies, small amounts of alcoholic drinks
  - Avoid food odors, let some air in
  - Set the table nicely
  - Serve the food in an appealing way

Nutritional therapy

For pancreatic cancer

- Diarrhoea:
  - To compensate loss of fluids: still water, tea, clear broth
  - Food that might help:

    Grated apple, banana puree, rusk, white bread, carrot soup, porridge, mashed potatoes

- Constipation:
  - Drink a lot, 1.5-2 litres
  - Increase intake of dietary fibre
  - Food with laxative effects: dried fruit, yoghurt, fruit juices
  - Daily exercising

Taking of enzymes might be necessary

After surgery

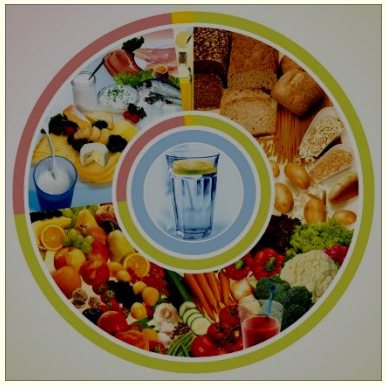
- Transition to a normal diet in the hospital
- Individual diet therapy
  - Balanced light diet
  - Important nutrient: fat
  - Energy-rich: many small meals (often)
- Treatment of digestive disorders
- Vitamin substitution
- Diabetes type 3c

Nutritional therapy

- Important nutrients: fat and protein
- Small amounts of alcohol are allowed
- Light diet as core concept – you can eat whatever is digestible for you
- Treatment of digestive disorders
- Enteral nutrition
- Parenteral nutrition
- Diabetes type 3c

Light normal diet

- Easily digestible food
- Balanced nutrition
- Preparation of dishes which are easy to digest
- Take your time while eating and chew carefully
- Several small meals
- 1.5-2 litres of fluids per day (light alcoholic drinks allowed)



Important nutrient – fat

- Do not reduce – main energy supplier!

- Choose easily digestible fats:
  - Vegetable oil: olive oil, rapeseed oil, sunflower oil
  - Butter as spread

- The amounts counts
  - Small amounts of nuts
  - Small amounts of cream
  - Small amounts of hard cheese (grated parmesan)

- **Often more difficult to digest**: lard, bacon, frying fat

Digestible protein-rich food

- Milk products 1.5-3.5 % fat
- Curd up to 10-20 % fat, sour cream
- Cheese up to 45 % fat (soft cheese, sliced cheese)
- Fish: often easily digestible, except extremely rich fish (eel, mackerel, herring)
- Meat: plain schnitzel, breast, filet, meat cut into strips
- Low-fat sausage and meat products: poultry sausages, boiled ham, smoked, rolled fillet of ham
- Scrambled eggs, soft boiled eggs

Digestible high-carb food

- Semolina, rice, noodles
- Bread: based on finely grounded flour, not whole grain
- Pastry: low-fat (rusk, cookies, fruitcakes)
- Bread and pastry not fresh, preferably from the day before
- Potatoes: digestible side dish, except when fried or breaded
- In moderation: sugar, honey, jam, fruit gums, liquorice
- Vegetables: often more easily digestible when cooked
- Fruits: ripe and soft better digestible, mild fruit juice

Nutrients and their effects in the human body

Nutrient/ active substance	Purpose in the body	Deficiencies
Protein	Development and maintenance of somatic cells Energy supplier (4 kcal/g)	Disruptions of the physical and mental development Disruptions of the productivity Decrease in robustness
Fat	Main energy supplier (9 kcal/g) of the essential fatty acids Carrier of fat-soluble vitamins Maintenance of cell membrane	Underweight Vitamin deficiency of fat-soluble vitamins ADEK Eczematous skin diseases
Carbohydrates	Energy supplier (4 kcal/g) Maintenance of body temperature	Risk of hypoglycaemia (low blood sugar level)

Nutrients and their effects in the human body

Nutrient/ active substance	Purpose in the body	Deficiencies
Vitamins	Regulation of metabolic processes	Interference of metabolic functions Vitamin deficiency diseases
Minerals/ trace element	Development and maintenance of the body Regulation of metabolic processes	Development of body substance Specific deficiency diseases

Nutrients and their effects in the human body

Nutrient/ active substance	Purpose in the body	Deficiencies
Dietary fibres	Digestion effect Prevention of intestinal diseases Avoidance of intestinal dysfunctions Prolonged saturation	Digestive disorders Development of intestinal diseases Development of metabolic dysfunctions and diseases
Water	Means of transport and solvent for nutrients etc. Development and maintenance of somatic cells Excretion of urinary substances	Restraining of substances that need to be excreted by urine Blood thickening (haemoconcentration) leading up to circulatory failure Deficiency in nutrients

Meal preparation

- Fry, but stop before dark roast is reached → golden instead of brown
- Avoid: browned cheese topping, braised, fried, breaded
- Dishes and drinks not too hot or too cold
- Season mildly (only a little pepper, mild curry, sweet paprika powder)
- Season not too spicy/strongly
- Suitable sauces: light creamy sauces (herbal sauce, bechamel sauce), tomato sauce, degreased roast sauce

Taking of enzymes might be necessary

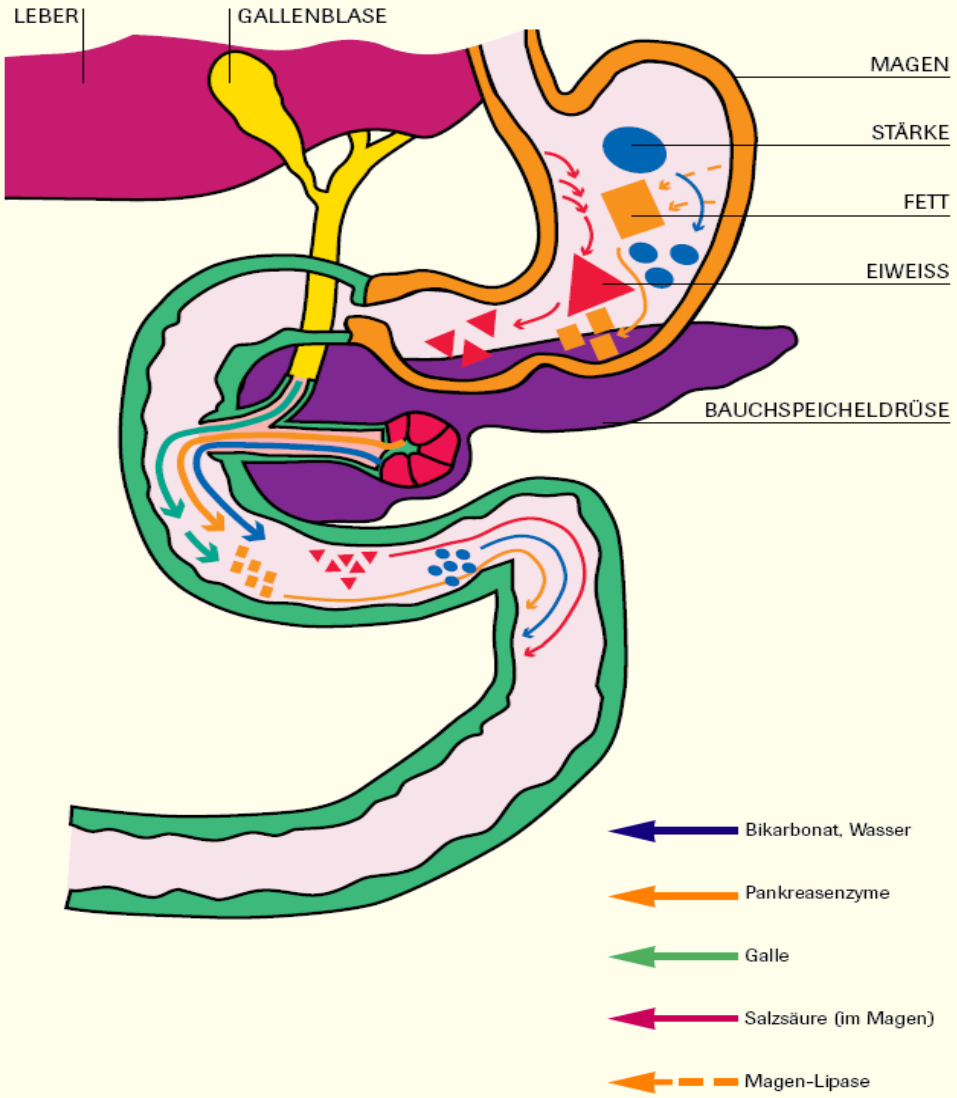
Digestive enzyme

Digestive enzymes amylase, protease and lipase are responsible for the body‘s intake of food.

Amylase - Starch

Protease - Proteins

Lipase - Fats



Symptoms for a deficiency in digestive enzymes

- Weight loss over a specific period of time
- Malnutrition
- Diarrhoea (often chronic)
- Often certain, mostly greasy dishes are indigestible
- Fatty stools (steatorrhea) (often malodorous)
- Flatulence (malodorous)
- Often stomach pains
- Indigested food components in the stool
- Chronic weakness

Dosing and application of digestive enzymes

Dosage:

- Per gramme fat :
  2,000-4,000 lipase units
- Individual adjustment of dosages required

Application:

- During meals
- Also with snacks between meals
- With supplementary nutrition
- High-caloric drinks

Successful enzyme therapy

- Weight gain

- Changes in the bowel movement:
  - Frequency decreases
  - Consistency more solid
  - Darker colour
  - Smell decreases

- Flatulence decreases

Complementary treatments

- Substitution of fat-soluble vitamins (A,D,E,K), vitamin B12
    - In case of insufficient intake
    - Recommended monthly after Kausch-Whipple surgery, complete removal of pancreas
- Additional vitamins, mineral salts as required
- Potential use of sip-feeding

Backup

Example for dosing and applying digestive enzymes

Breakfast	**Energy** (kcal)	**Fat** (g)	**Lipase** (units)
2 bread rolls, 20 g butter, 1 portion of honey and jam, coffee with sugar and milk	551	19	50,000
Lunch			
Currant spaghetti with turkey breast	550	14	28,000
Cakes and dessert			
Apple pie with glaze made of sugar, cream and eggs, crumble or almond flakes	353	19	38,000
Dinner			
2 Toast Hawaii, tomato salad, black tea with sugar	466	23	50,000
Alcohol-free drinks			
Strawberry ice cream with yield oats flakes, coconut cream, cream and honey	228	17	34,000

Diabetes type 3c

- Deficient, missing hormone production
- Therapy:
  - With insulin (and potentially glucagon)
  - Close blood glucose control
- No prohibitions
  - Adjust insulin dose to nutrition (calculation of bread unit)
- Choice of carbs
  - Avoid sugar and juices
  - In combination with protein and fat (fruit curd, cheese sandwich)
  - Choose complex carbs: grain, potatoes, bread, rice, preferably whole grain