

The banner image shows a top-down view of a garden bed. In the center, the logo 'dHb' is displayed in white, with a small green leaf above the 'b'. Below the logo, the text 'DANSKE HELSEKOSTFORRETNINGERS BRANCHEFORENING' is written in white capital letters. Surrounding the text are various garden items: a green fork, a silver trowel, a small metal bowl, a yellow rubber boot, a small potted plant, and several green leafy plants.

Underviser: Montserrat Farré Hernández

*Biopat / Naturopath ibm.
Certificeret i Klinisk og Sport Ernæring
Diætist stud.
www.cbniibm.dk*



HVAD SKAL VI LAVE I DAG?

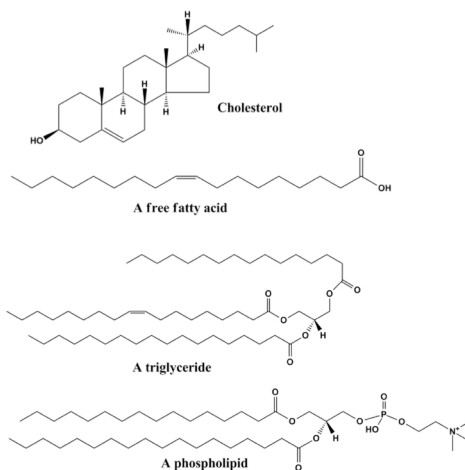
- Proteiner og aminosyrer
 - Hvad er proteiner
 - Aminosyrer
 - Proteinets kvalitet
 - Proteiner i den vegetar og veganske kost
 - Hvor meget protein har vi brug for
 - Protein metabolisme
 - Protein fordøjelse og generelt om fordøjelsen
- Gluten
 - Hvad er gluten
 - Hvor findes den
 - Næringsstoffer i korn
 - Sygdomme relateret til gluten

HVAD ER PROTEINER?



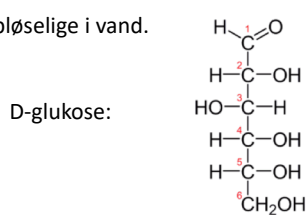
De organiske biomolekyler fordeles i 5 store grupper:

- Lipider: Dem vi kalder for fedtstoffer. De er uopløselige i vand.

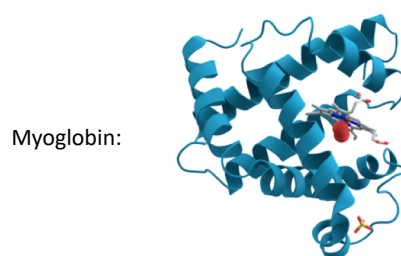


De organiske biomolekyler fordeles i 5 store grupper:

- Kulhydrater: De giver energi. De er opløselige i vand.

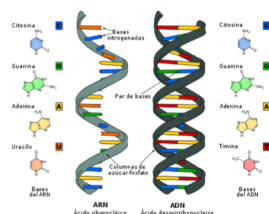


- Proteiner: En lang kæde af aminosyrer. De har mange funktioner i kroppen.

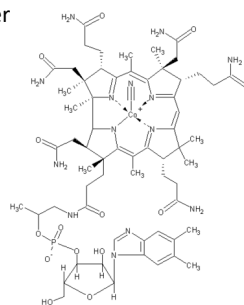
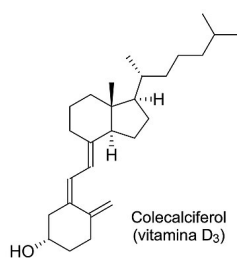


De organiske biomolekyler fordeles i 5 store grupper:

- Nukleinsyrer: RNA og DNA

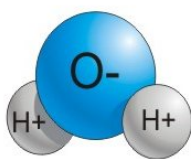


- Vitaminer: Kofaktorer i enzymatiske reaktioner



De uorganiske biomolekyler fordeles i 2:

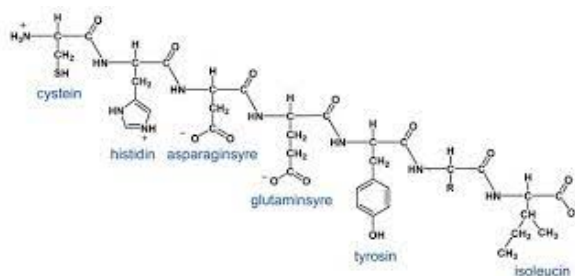
- Vand



- Mineralsalte

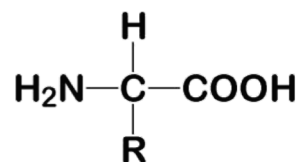


Proteinkæde:

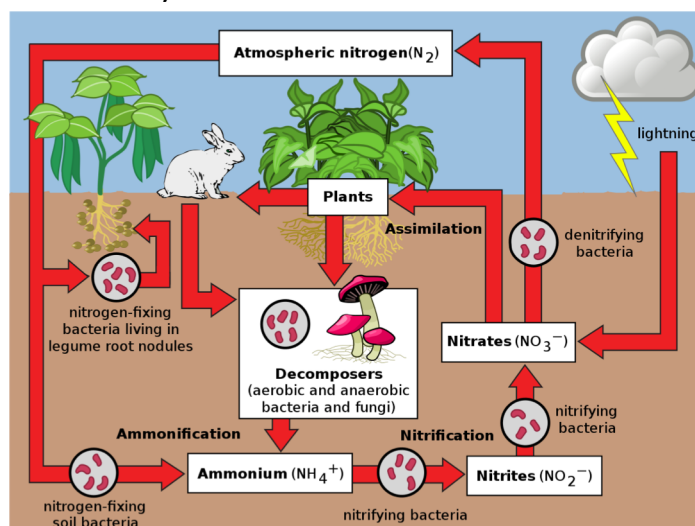


Kilde: Metalloproteiners kemi – DTU kemi

Aminosyre sammensætning:

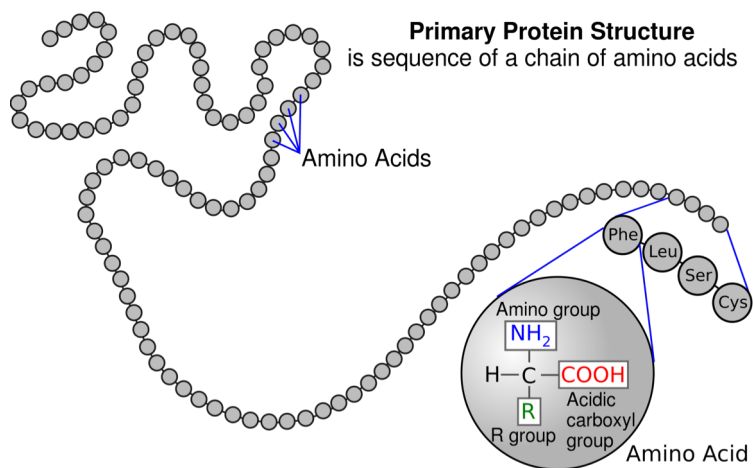


Kvælstofkredsløb:



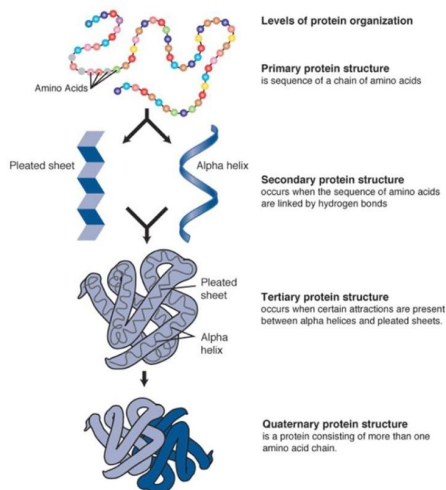
Kilde: https://en.wikipedia.org/wiki/Nitrogen_cycle

Polypeptidkæde:



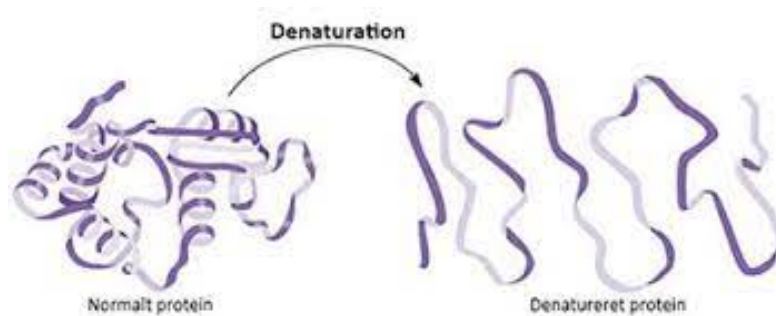
Kilde: <https://da.wikipedia.org/wiki/Aminosyre>

Proteiners strukturer:



Kilde: https://www.researchgate.net/figure/Four-degrees-of-Protein-structure-4_fig1_329864306

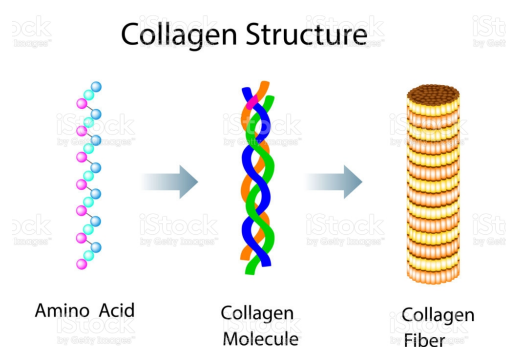
Denaturering af proteiner:



Kilde: https://rucforsk.ruc.dk/ws/portalfiles/portal/57530286/Rapport_endelig.pdf

Funktioner af proteiner i kroppen:

- Strukturel eller plastisk:

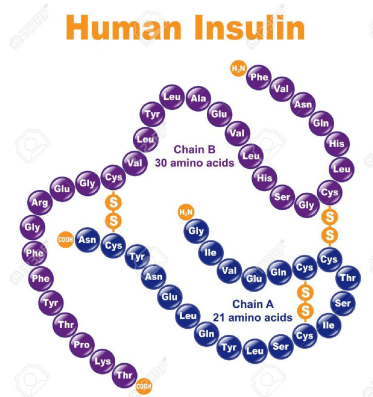


Kilde: <https://www.istockphoto.com/se/vektor/vektor-illustration-med-kollagen-struktur-f%C3%86r-medicinska-och-pedagogiska-bilder-om1195968051-341029864>

Funktioner af proteiner i kroppen:

- Regulerende:

Insulin

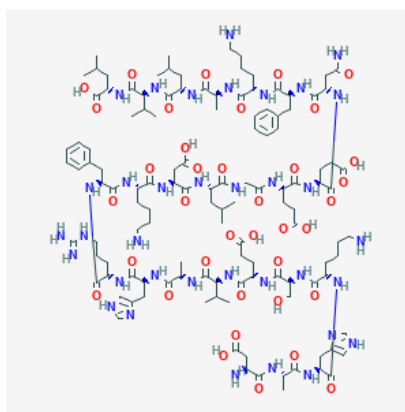


Kilde: <https://www.dshs-koeln.de/institut-fuer-biochemie/doping-substanzen/doping-lexikon/i/insulin-struktur-doping-und-nachweis/>

Funktioner af proteiner i kroppen:

- Transport:

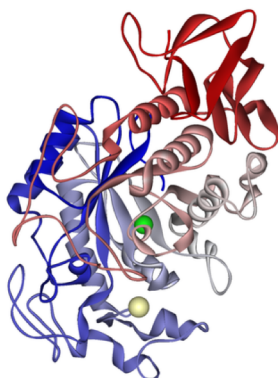
Albumin



Kilde: <https://www.dshs-koeln.de/institut-fuer-biochemie/doping-substanzen/doping-lexikon/i/insulin-struktur-doping-und-nachweis/>

Funktioner af proteiner i kroppen:

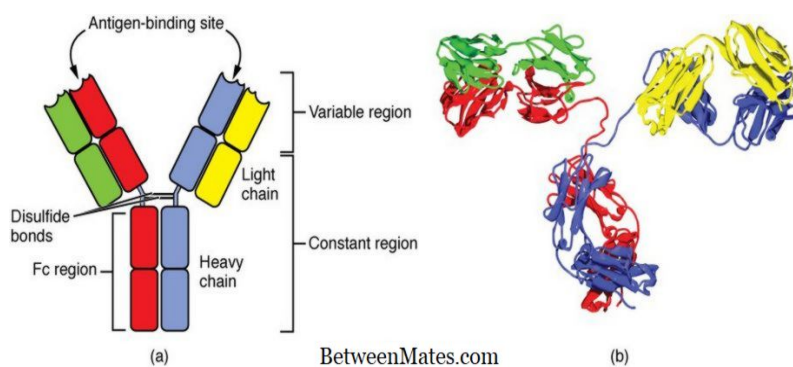
- Katalysator: Amylase



Kilde: <https://en.wikipedia.org/wiki/Amylase>

Funktioner af proteiner i kroppen:

- Immunforsvar: Antistoff

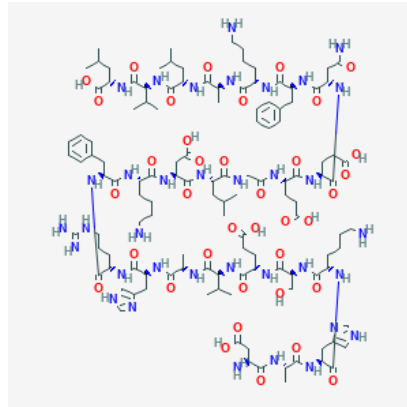


Kilde: <https://hu.weblogographic.com/difference-between-igm-and-igg-5894>

Funktioner af proteiner i kroppen:

- Homøostase:

Albumin

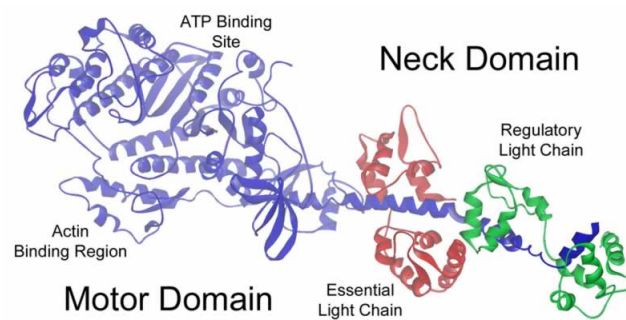


Kilde: <https://www.dshs-koeln.de/institut-fuer-biochemie/doping-substanzen/doping-lexikon/i/insulin-struktur-doping-und-nachweis/>

Funktioner af proteiner i kroppen:

- Sammentrækkende:

Myosin



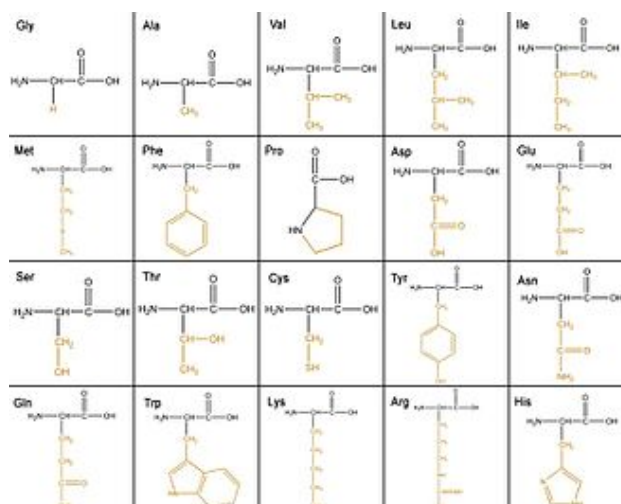
Kilde: <https://dir.nhlbi.nih.gov/labs/lmc/cmm/myosinlab.asp>

Funktioner af proteiner i kroppen:

- Energi:



De 20 standardaminozyrer i proteiner:



Kilde: <https://da.wikipedia.org/wiki/Aminosyre>

Essentielle aminosyrer:

Phenylalanin	Leucin
Lysin	Valin
Tryptophan	Methionin
Threonine	Histidin
Isoleucin	Arginin (kun hos børn)

Kroppen kan **IKKE** danne dem selv

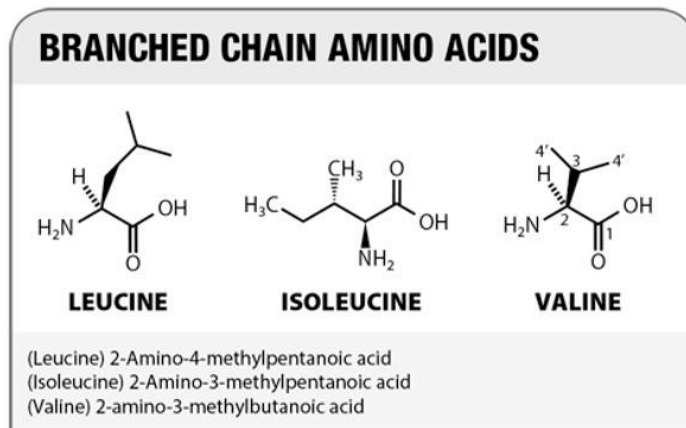
Vi **skal indtage** dem gennem vores kost

Ikke essentielle aminosyrer:

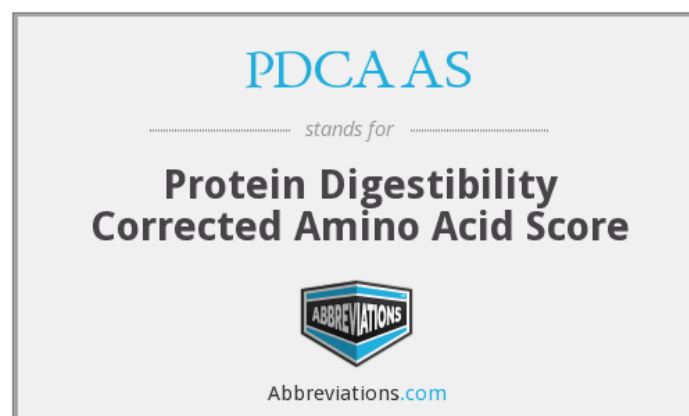
Tyrosin*	Asparagin
Glycin*	Asparginsyre
Alanin	Glutaminsyre
Cystein*	Glutamin
Serin*	Prolin*

*Disse aminosyrer kan blive essentielle i nogle sygdomme

Kroppen kan danne dem selv ud fra andre aminosyrer

BCAA Branched-chain amino acids:

Kilde: <https://www.healthline.com/nutrition/bcaa>

Protein kvalitet:

Protein kvalitet:

PROTEIN AND AMINO ACIDS 687

TABLE 10-24 Proposed Amino Acid Scoring Patterns for Infants, Preschool Children, and Adults Based on Estimated Requirements for Protein and Indispensable Amino Acids

Amino Acid	Infants ^a	Preschool Children (1-3 y)		Adults (18+ y)	
	(mg/g protein)	(mg/g protein) ^b	(mg/g N) ^c	(mg/g protein) ^b	(mg/g N) ^c
Histidine	23	18	114	17	104
Isoleucine	57	25	156	23	142
Leucine	101	55	341	52	322
Lysine	69	51	320	47	294
Methionine + cysteine	38	25	156	23	142
Phenylalanine + tyrosine	87	47	291	41	256
Threonine	47	27	170	24	152
Tryptophan	18	7	43	6	38
Valine	56	32	199	29	180

^a Pattern based on amino acid composition of human milk (from Table 10-18).
^b Pattern derived from (EAR for amino acid ÷ EAR for protein); for 1-3 y group, where EAR for protein = 0.88 g/kg/d; for adults, EAR for protein = 0.66 g/kg/d. EAR is Estimated Average Requirement.
^c Calculated as (mg/g protein) × 6.25.

Kilde: <https://www.nap.edu/read/10490/chapter/12#687>

Protein kvalitet:

Patrón de aminoácidos propuesto para niños > a 1 año y adultos. Institute of Medicine. National Academy of Sciences. 2002

AA	(mg/g proteína)
Histidina	18
Isoleucina	25
Leucina	55
Lisina	51
Metionina + Cisteína	25
Fenilalanina + Tirosina	47
Treonina	27
Triptofano	7
Valina	32

El PDCAAS se calculó en cada caso multiplicando el dato de score por la cifra de digestibilidad proteica:

$$PDCAAS = \text{score} \times \text{digestibilidad}$$

Kilde: https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0212-16112006000100009

Protein kvalitet:

"Score" for et protein afspejler dets aminosyreindhold (AA) sammenlignet med det ideelle protein.

Men vi har brug for at vide, hvor meget af disse AA kroppen er i stand til at optage efter fordøjelsen, er det nødvendigt at rette scoren i henhold til proteinfordøjelighed (PDCAAS).

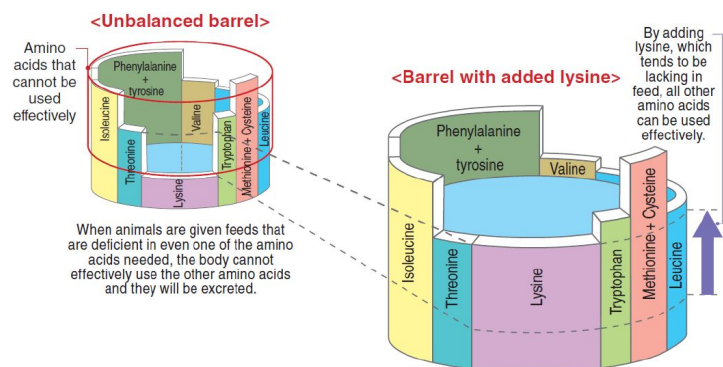
$$\text{PDCAAS} = \text{Amino Acid Score} \times \text{Digestibility}$$

Protein kvalitet:

Food	PDCAAS
Casein (milk protein)	1.0
Whey (milk protein)	1.0
Egg	1.0
Soy protein	1.0
Beef	0.92
Soybeans	0.91
Fruits	0.76
Whole wheat	0.42

Kilde: https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0212-16112006000100009

Begrænsende aminosyre:



Amino acids are essential nutrients for all animals. In particular, amino acids that cannot be synthesized within the body—known as essential amino acids—must be obtained through the diet. However, there are amino acids that tend to be deficient in conventional compound feeds such as corn, wheat and soybean meal given to livestock. Feed-use amino acids—represented by lysine, threonine, and tryptophan—are used to compensate for these deficiencies.

Kilde: https://en.wikipedia.org/wiki/File:The_Barrel_Theory_of_amino_acids.jpg

Proteiner i den vegetar og veganske kost:

Mest begrænsende aminosyre → LYSIN

Hvor findes den? Især i bælgrugter (linser, kikærter, bønner, quinoa, amaranth)

Anden begrænsende aminosyre → METHIONIN

Hvor findes den? Især i korn, frø, kerner og nødder

Voksen kan spise af begge grupper i løbet af dagen for at lave komplet protein.

Børn skal spise begge grupper til hvert måltid.

Komplette vegetabiliske proteiner:

Gode kilder til lysin: ALLE BÆLGFRUGTER



Kikærter



Linser



Bønner

Gode kilder til methionin: KORN, NØDDER, FRØ og KERNER



Korn



Nødder



Frø



Kerner

Komplette vegetabiliske proteiner:



Hummus



Chili sin carne med ris



Dahl med brød eller ris

Hvor meget protein har vi brug for:

Generelle anbefalinger:

WHO	10 – 15% af den totale dagligt kalorie indtag
EFSA	minimum 0,83 g x kg vægt x dag anser 1,6 g x kg vægt x dag som sundt
Andre undersøgelser	2 g x kg vægt x dag
Vegetar og veganer	1,0 – 1,1 g x kg vægt x dag

Men det skal altid tilpasses efter alderen, aktivitets niveau, livssituation, hvis der er specifikke formål, osv... **INDIVIDUALISERING!!**

Hvor meget protein har vi brug for:

Kød	:	18-24%	20 g x 100 g
Fisk/skaldyr:		15-21%	20 g x 100 g
Æg:		13%	14 g x 100 g (portion er 2 æg af ca.60g)
Mælk:		3-4%	6 g i et glas af 200 ml
Yoghurt naturel:		4-5%	4,5 g x 100 ml
Linser:		18-24%	20 g x 100 g tør vægt = ca.300 g kogt, ikke komplet
Kikærter:		18-24%	20 g x 100 g tør vægt = ca. 300 g kogt
Soja		36%	18 g x 100 g tempeh / 17 g x 200 g tofu
Fuldkornsrís		7-8%	6 g x 90 g tør vægt = 150-200 g kogt, ikke komplet
Quinoa		13-14%	10 g x 80 g tør vægt
Havre		13%	10 g x 80 g tør vægt, ikke komplet
Nødder		20%	4-5 g x 20-25 g en håndfuld, ikke komplet
Kerner og frø		18-30%	2-3 g x 1 spsk., ikke komplet
Grøntsager		1-4%	2 g gennemsnit, ikke komplet

Hvor meget protein har vi brug for:

1 portion protein forstås som **20-22 gram** af komplet protein.

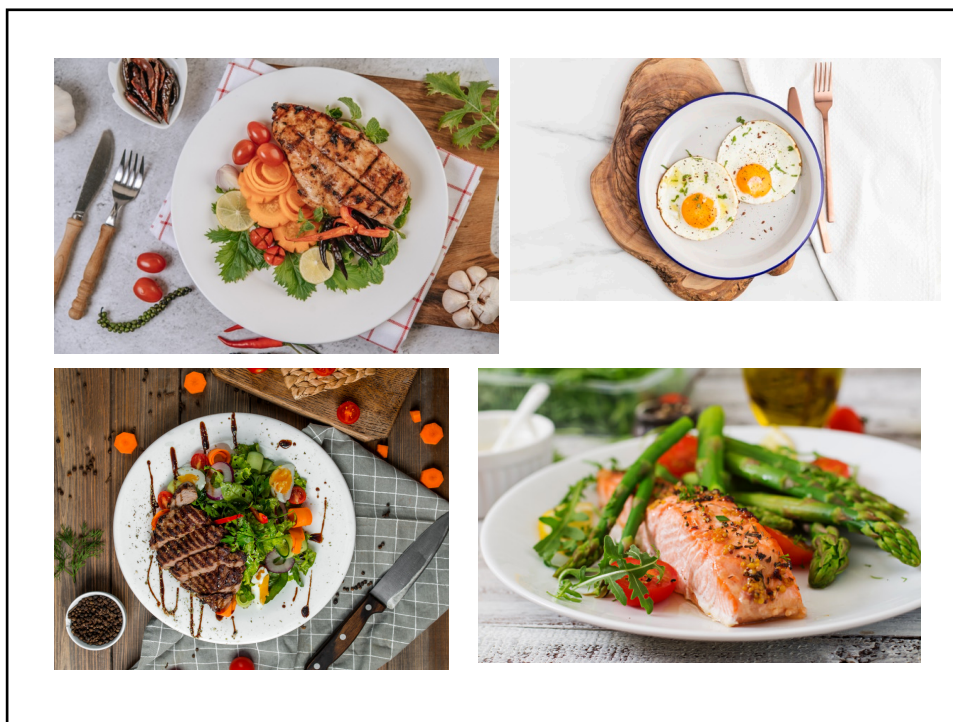
Vi får 20 – 22 gram komplet protein, når vi spiser:

100 – 125 g kød
 100 – 125 g fisk
 2 æg
 1 tallerken kikærter eller azuki bønner, kogt ca. 250 – 300 g
 2 tallerkner quinoa eller boghvede, kogt 250 – 300 g
 100 – 125 g tempeh
 180 – 200 g tofu

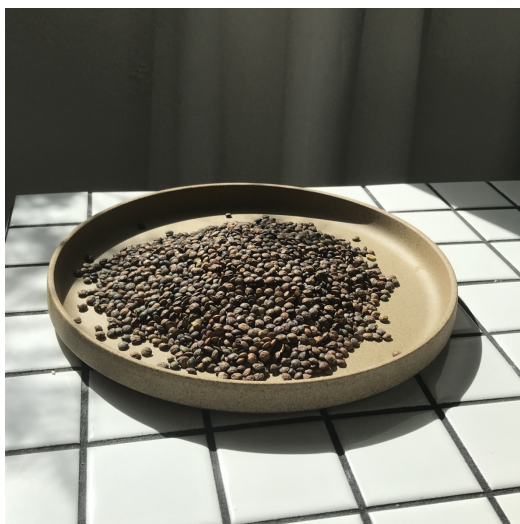
Husk, at linser og de andre bønner skal kombineres med korn, nødder, kerner eller frø for at få komplet protein:

bælgfrugter + korn
 bælgfrugter + nødder
 bælgfrugter + frø/kerner





100 g tør linser:



100 g kogte linser:



Soja? Ja eller nej



Hvor meget protein har vi brug for:

Hvad sker hvis vi mangler protein?

- Tab af muskelmasse, langsommere vækst og udvikling af væv
- Skrøbelige hår, svage negle, og hud problemer
- Ubalancer i mave-tarm-slimhinden
- Nedsættelse af immunforsvar
- Ødem i ekstremiteter og i maven i ekstreme tilfælde af underernæring

Hvor meget protein har vi brug for:

Hvad sker hvis vi får for meget protein?

- De aminosyrer, der ikke bruges som proteiner, opbevares ikke, og de skal "deamineres" (dvs. at gruppen med kvælstof tages væk) og de omdannes til **ammoniak** → **urea** (urinstof) → udskilles gennem urinen.

Hvis det ikke fungerer korrekt → **uræmisk tilstand**, der forårsager irritabilitet, hovedpine, forvirring.

- Svovlaminosyrer (det meste findes i animalske protein) → **svovlsyre** → skal også nedbrydes, neutraliseres og elimineres.

- Puriner (kvælstofholdige forbindelser) → når de nedbrydes, produceres der **urinsyre** → skal elimineres.

Hvis det ikke fungerer korrekt → ophobes den i blodet → hyperurikæmi → **nyresten og urinsyreigt** (podagra).

Hvor meget protein har vi brug for:

Animalske proteiner vs vegetabiliske proteiner:

Fordele animalske proteiner:

- De er komplette proteiner
- Generelt med god fordøjelse, især
- De indeholder hæmo-jern, især rødt kød
- De er kilde til B12 vitamin

Ulemper animalske proteiner:

- Mangler fiber, vitaminer C, K, folinsyre og phytonutrient
- Øger den putrefaktive mikroflora i tarmen → dysbioser
- Dannes sure metaboliter → ammoniak, svovlsyre, urinsyre
- Høje miljømæssige og socioøkonomiske omkostninger:
 - 40% af kornproduktionen går til dyrindustrien,
 - 51% af drivhusgasserne produceres af dyrindustrien og deres biprodukter.
 - At producere 1 kg animalsk protein kræver 40 gange mere vand end 1 kg kornprotein, osv...

Hvor meget protein har vi brug for:

Animalske proteiner vs vegetabiliske proteiner:

Fordele vegetabiliske proteiner:

- Rige på fiber, mineraler, nogle vitaminer, phytonutrier og antioxidanter
- De favoriserer det fermentative microflora
- Miljø fordele

Ulemper vegetabiliske proteiner:

- Generelt er de ikke komplette
- Dårligere fordøjelse
- Nogle indeholder nogle uønskede stoffer, for eksempel soja indeholder puriner, proteasehæmmere, isoflavoner, eller hvede indeholder gluten, osv...

Protein metabolisme:

Katabolske ruter



Anabolske ruter



Protein metabolisme:

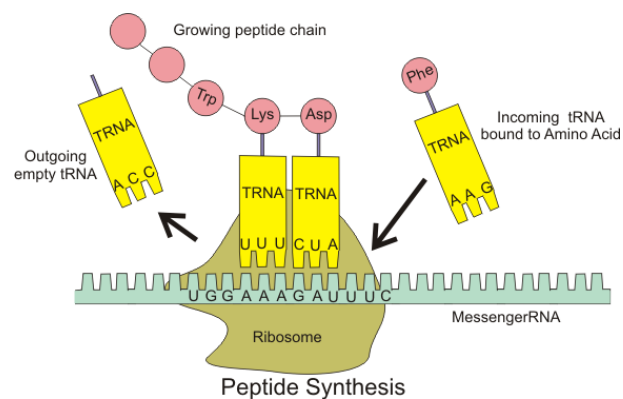
I protein metabolisme er prioritering de anabolske ruter!



Protein metabolisme:

Proteinsyntese:

<https://www.youtube.com/watch?v=oefAl2x2CQM&t=57s> (3'44'')

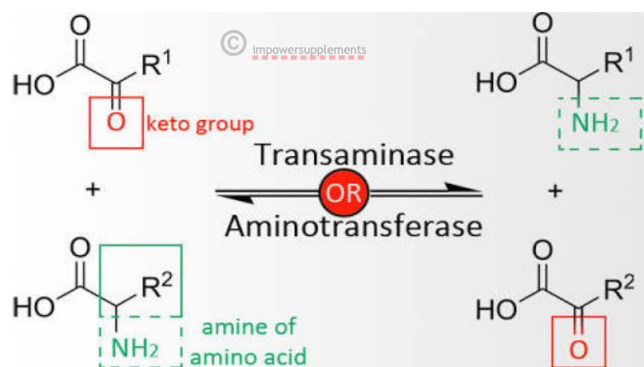


Kilde: https://www2.nau.edu/lrn22/lessons/protein_synthesis/protein_synthesis.htm

Protein metabolism:

Transaminering:

<https://www.youtube.com/watch?v=Sy-rfy5Mdc0>

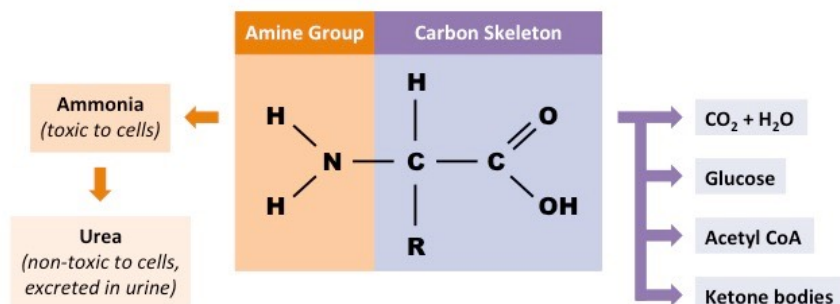


Kilde: <https://iinedscholar.com/open-blog/biochemistry/transamination/>

Protein metabolism:

Deaminering:

<https://www.youtube.com/watch?v=GT-9sgGMlkQ>

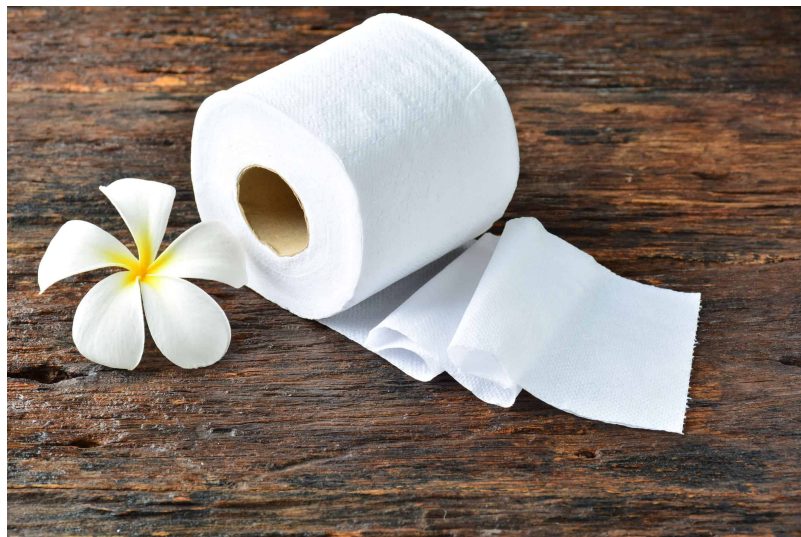


Kilde: <https://ib.bioninja.com.au/options/option-4-human-physiology/43-functions-of-the-liver/deamination.html>

Proteinfordøjelse:



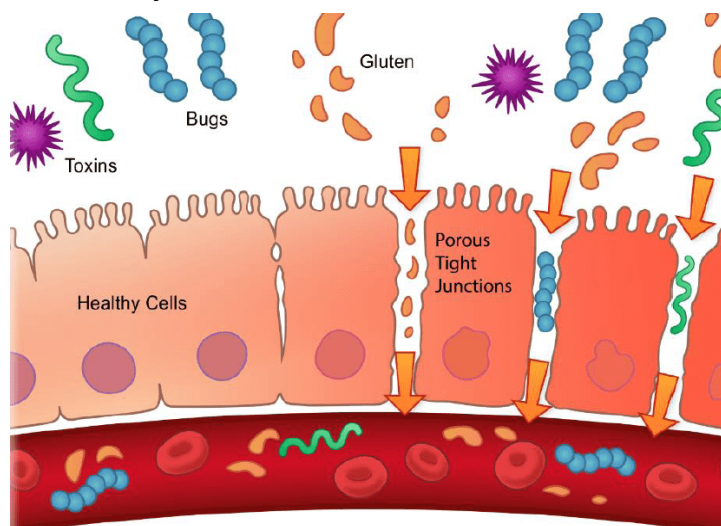
Proteinfordøjelse:



Proteinfordøjelse:

	Type 1	Separate hard lumps	SEVERE CONSTIPATION
	Type 2	Lumpy and sausage like	MILD CONSTIPATION
	Type 3	A sausage shape with cracks in the surface	NORMAL
	Type 4	Like a smooth, soft sausage or snake	NORMAL
	Type 5	Soft blobs with clear-cut edges	LACKING FIBRE
	Type 6	Mushy consistency with ragged edges	MILD DIARRHEA
	Type 7	Liquid consistency with no solid pieces	SEVERE DIARRHEA

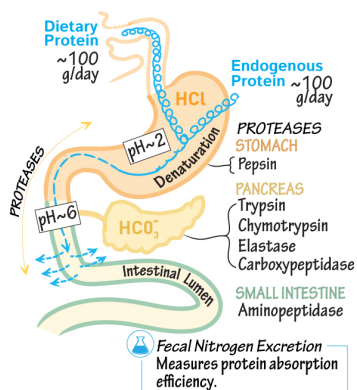
Proteinfordøjelse:



Kilde: <https://nutritionandvitality.co.uk/uncategorized/leaky-gut-symptoms/>

Proteinfordøjelse:

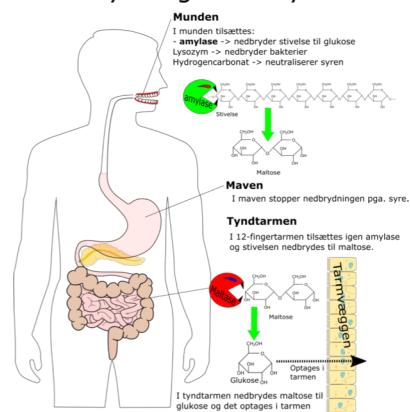
<https://www.youtube.com/watch?v=2Pzkagyyb-8>



Kilde: <https://www.drawittoknowit.com/course/biochemistry/glossary/biochemical-pathway/protein-digestion-absorption>

Fordøjelse:

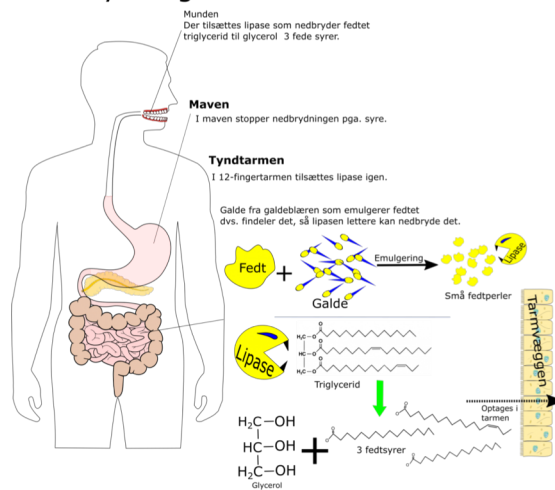
<https://www.youtube.com/watch?v=GpN9qZlxP7M>

Nedbrydning af kulhydrat

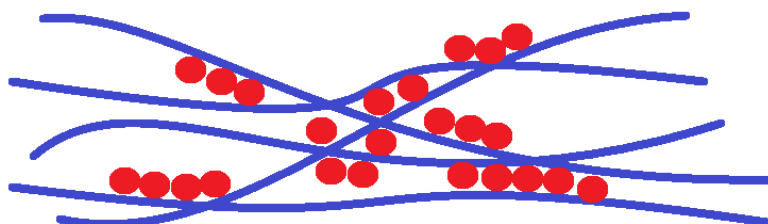
Kilde: <https://www.deterzodtatvide.dk/nedbrydning-af-kulhydrat/>

Fordøjelse:

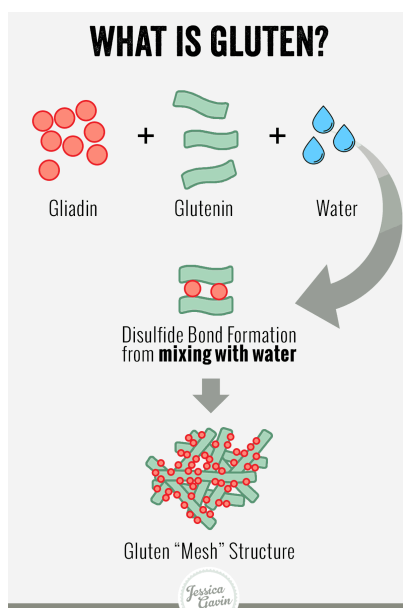
<https://www.youtube.com/watch?v=dFZBo9qatCU>

Nedbrydning af fedt

Kilde: <https://www.detersgodtvide.dk/nedbrydning-af-fedt/>

HVAD ER GLUTEN?

Kilde: <https://www.grandmasfoodlab.com/tipstricks-and-curiosities/quickies-readies/2019-02-04-gluten-is-the-new-propuh>



Kilde: <https://www.jessicagavin.com/what-is-gluten-and-why-its-important/>

Gluten findes i korn



Men ikke i alle...

Glutenfri korn og pseudokorn (græsarter):

Majs	Teff
Ris	Boghvede
Hirse	Quinoa
Sorghum	Amaranth

Havre, kun hvis den er certificeret glutenfri

Gluten findes i korn:

Gluten		Hvede	Rug	Byg	Havre
	Prolamin	Gliadin 69%	Secalin 30-50%	Hordein 46-52%	Avenin 16%
	Glutelin	Glutenin	Secalinin	Hordenin	Avenalin

Bestanddele i korn:

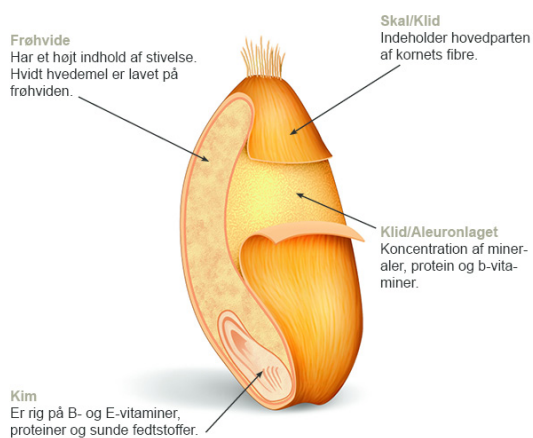


Illustration: Dalhoff Design

Kilde: <https://fuldkorn.dk/front-page/hvad-er-fuldkorn/>

Næringsstoffer i korn:

Vand:	10 – 15%	
Kulhydrater:	60 – 80% næsten alt er stivelse	
Proteiner:	7 – 15%	inkomplet protein, den mangler især aa lysin komplet protein i boghvede, quinoa, amaranth raffineret korn har mindre protein
Lipider:	0,3 – 7%	mest flereumættede omega-6, findes især i kim raffineret korn har mindre protein
Mineraler	1,5 – 2,5%	Zn, Ca, Fe, Mg, P, K, Co kun i fuldkorn
Vitaminer	Meget små mængder	B1, B2, B3, B5, B6 E i kim
Antinutrient	Phytinsyre, inositolphosphater, lektiner	

Sygdomme relateret til gluten:

Den ægte gluten allergi (IgE)

Den autoimmune form (IgA og/eller IgG)

Intolerance

Ægte gluten allergi:

IgE antistoffer i blodet

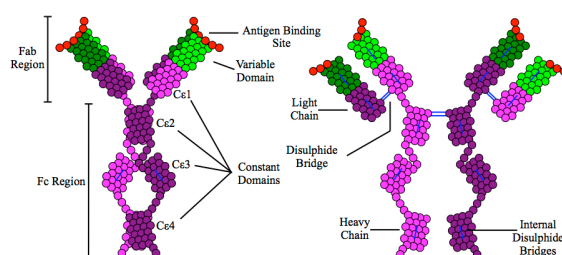
Inddeles i:

Fødevarerallergi

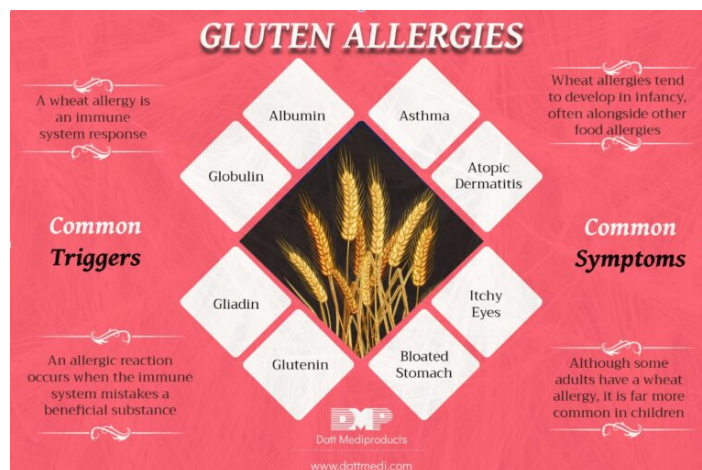
Luftvejsallergi

Hudallergi

Wheat-dependent exercise-induced anaphylaxis



Fødevarerallergi:



Kilde: <https://dattmedi.com/blog/wheat-or-gluten-allergy/>

Luftvejsallergi:



Kilde: <http://alergomalaga.blogspot.com/2019/05/el-asma-del-peluquero.html>

Hudallergi:



Kilde: <https://www.planet-health.dk/mave-og-tarm/6-almindelige-tegn-som-kan-tyde-pa-at-du-er-glutenintolerant/>

Wheat-dependent exercise-induced anaphylaxis (WDEIA):



Wheat-dependent
exercise-induced
anaphylaxis
(WDEIA)

Amornrat Prasertcharoensuk, MD

Kilde: <https://www.slideshare.net/AllergyChula/wheat-dependent-exerciseinduced-anaphylaxis>

Wheat-dependent exercise-induced anaphylaxis (WDEIA):

Wheat-dependent exercise-induced anaphylaxis (WDEIA)

- Triggered by wheat ingestion only together with cofactors such as physical activity



Kilde: <https://www.slideshare.net/AllergyChula/wheat-dependent-exerciseinduced-anaphylaxis>

Wheat-dependent exercise-induced anaphylaxis (WDEIA):

Clinical features

- Symptoms of WDEIA are usually elicited by physical activity one to four hours after wheat intake
- The frequency of WDEIA events varies from patient to patient and ranges from a singular episode to multiple episodes .
- The clinical manifestations and severity of allergic reactions from urticaria to anaphylaxis also vary

K. A. Scherf, K. Brockow, wheat-dependent exercise - induced anaphylaxis , Clinical & Experimental Allergy, 46, 10-20

Kilde: <https://www.slideshare.net/AllergyChula/wheat-dependent-exerciseinduced-anaphylaxis>

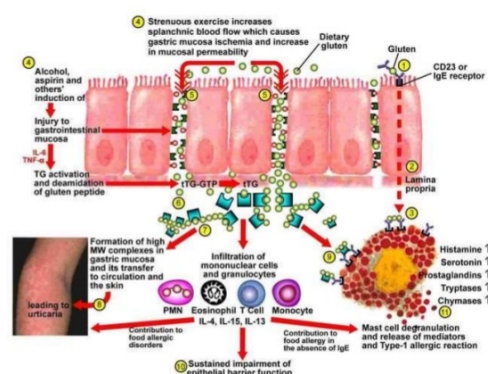
Wheat-dependent exercise-induced anaphylaxis (WDEIA):

Cofactors

- Exercise : up-regulates intestinal resulting in increased amounts of food antigens in the circulating blood.
: enhances the degranulation of mast cells in combination with IgE cross-linking through an unknown mechanism.
- Aspirin : damage to the tight junctions in the gastrointestinal mucosa.
: degranulation of mast cells and accelerate histamine release via increased Syk kinase activation
: PGE 1 may suppress allergen absorption

Kilde: <https://www.slideshare.net/AllergyChula/wheat-dependent-exerciseinduced-anaphylaxis>

Wheat-dependent exercise-induced anaphylaxis (WDEIA):



Schematic presentation of the pathophysiology of the immediate hypersensitivity reactions (Type I allergy) of the intestine.

<http://www.glutensensitivity.net/VojdaniDiagrams.htm>

Kilde: <https://www.slideshare.net/AllergyChula/wheat-dependent-exerciseinduced-anaphylaxis>

Wheat-dependent exercise-induced anaphylaxis (WDEIA):

TREATMENT OF WDEIA

- Acute management - immediate termination of physical effort
 - Pharmaceuticals such as Adrenaline , Antihistamine
- Prevent further episode of WDEIA
 - education and how to use adrenaline autoinjectors.
 - written anaphylaxis management plan as well as dietary counselling
 - classical recommendation of refraining from exercise for 4-6 h after wheat intake may be insufficient because unexpected exercise, NSAIDs .
 - a gluten – free diet recommended need to avoid wheat only or other gluten- containing cereals .

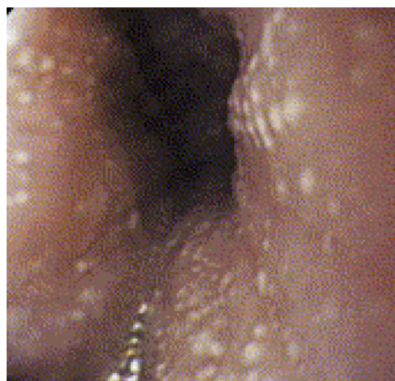
K. A. Scherf1, K. Brockow, wheat-dependent exercise – induced anaphylaxis , Clinical & Experimental Allergy, 46, 10–20

Kilde: <https://www.slideshare.net/AllergyChula/wheat-dependent-exerciseinduced-anaphylaxis>

Gluten allergi uden IgE:

Eosinofil gastroenteritis

Eosinofil øsofagitis



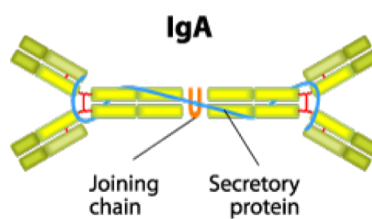
Kilde: <https://dsgh.dk/index.php/ovre-gi/eosinofil-oesofagitis>

Behandling:



Den autoimmune form:

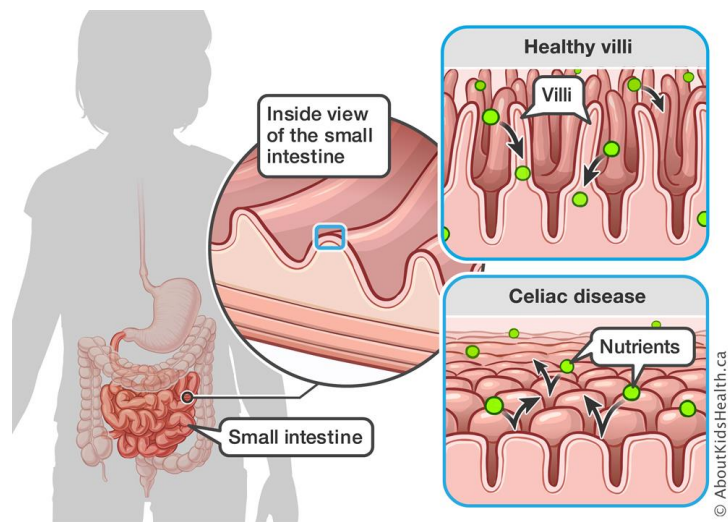
IgA og/eller IgG antistoffer i blodet



Kilde: <https://www.quora.com/Why-is-antibody-IgA-represented-as-H4L4>

Inddeles i:

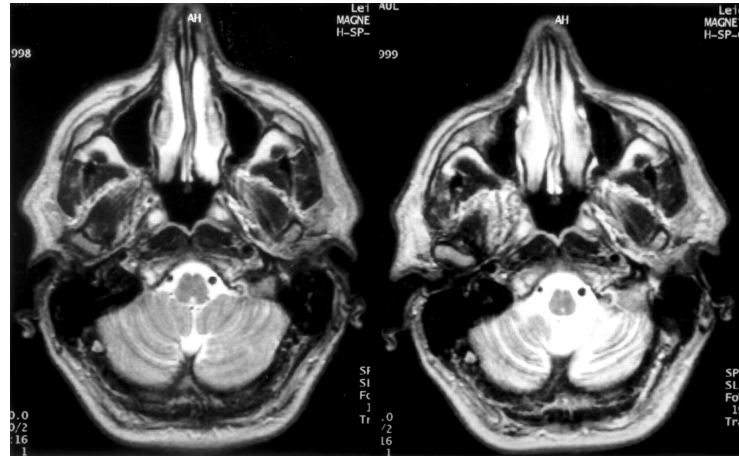
- Køliaki
- Dermatitis herpetiformis
- Gluten ataksi

Kølliaki:

Kilde: <https://www.aboutkidshealth.ca/Article?contentid=816&language=English>

Dermatitis herpetiformis:

Gluten ataksi:



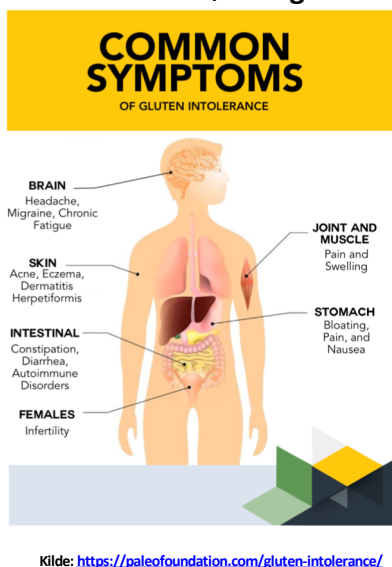
Brain MRI of a patient with gluten ataxia showing rapid onset of cerebellar atrophy over a period of 15 months before the diagnosis of gluten ataxia.

Kilde: <https://innp.bmj.com/content/72/5/560>

Behandling:



Gluten intolerance eller ikke-køliaki glutenovefølsomhed:



Behandling:



Hvordan påvirker gluten hjernen



Hvordan påvirker gluten hjernen

Opioid Effect

- Gliadomorphin (gluten opioid)
- BCM7 (casein opioid)
 - Both are toxic for anyone with any abnormal GI function
 - These opioids are not digested, leak into body
 - Cross BBB and stimulate morphine-like effects
 - IgA immune response
 - BCM7 in particular causes inattentiveness, unclear thinking, irregular sleep and eating

The Bad

Kilde: <https://www.slideshare.net/Kellvihme/gluten-and-casein>

Hvordan påvirker gluten hjernen

The Bad

Research on Schizophrenia

- Large amounts of gliadomorphins/BCM7 found outside the gut
 - 86% had IgA antibodies targeting gluten found outside gut
 - 67% had IgA targeting casein
 - More than 80% had elevated IgG antibodies
- Are your pts overly fatigued, hostile, inattentive, infection prone???

Kilde: <https://www.slideshare.net/Kellyhms/gluten-and-casein>

"The doctor of the future will give no medicine, but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of disease."

-Thomas Alva Edison



