

## Biogene Amine, Peptide und Proteine u.a.

### A. Aus der Thio(l)esterwelt, from the thio(l)ester world

<http://www.xerlebnishaft.de/lebensstrukturenvergleich.pdf>

Eiweiß hat **Schwefel** (Cystein, Methionin, Glutathion, Acetylcystein, Glutathion, Sulfonsäuren)  
Protein has sulfur (cysteine, methionine, glutathione, acetylcysteine, glutathione, sulfonacids)

Thioester-Gruppen (SH-Gruppen) spielen im Komplement-System <http://xerlebnishaft.de/complement.pdf>  
eine zentrale Rolle als Vermittler zwischen Eiweiß- und Purin- Stoffwechsel.

Thioester groups (SH-groups) play in the complement system <http://xerlebnishaft.de/complement.pdf>  
a central role as an intermediary between protein and purine metabolism.

DeDuve Chr (1994) Ursprung des Lebens. Präbiotische Evolution und die Entstehung der Zelle. Spektrum.  
<http://www.amazon.de/Der-Ursprung-Lebens-Pr%C3%A4biotische-Entstehung/dp/3860251872>

Eiweiß hat im Gegensatz zu den Nukleinsäuren kein Phosphor  
Protein, in contrast to the nucleic acids has no phosphorus

Thio(l)ester Thioester zur nucleophilen Acylierung in der Natur

[http://www.chem.uzh.ch/robinson/lectures/AC\\_BII/Kap11/kap11.html#11.13](http://www.chem.uzh.ch/robinson/lectures/AC_BII/Kap11/kap11.html#11.13)

<http://www.xerlebnishaft.de/lebensstrukturenvergleich.pdf>

Spermidin <http://www.xerlebnishaft.de/bildmethyl-arginin.pdf>

Lida Mattman (2001) Cell Wall Deficient Forms. Stealth Pathogens. CRC Press, Seite , page 93

**“Spermine levels might explain why some individuals have classical bacteria in infections and others only L-Phase organisms”.**

**„Die Spermin Mengen könnten erklären warum manche Patienten klassische Bakterien ausbilden und andere nur intrazellulär persistierende bakterielle Dauerformen (L-Formen, Spheroplasten)“.**

L-Arginin <http://www.xerlebnishaft.de/bildmethyl-arginin.pdf>

Der **Harnstoffzyklus** (auch Arginin- oder Krebs-Henseleit-Zyklus) verwandelt bei Säugetieren die meist toxischen stickstoffhaltigen Abbauprodukte der Proteine, z.B. Ammonium, zu ungiftigem Harnstoff.

The **urea cycle** (also arginine or Krebs-Henseleit cycle) in mammals transforms usually toxic nitrogenous decomposition products of proteins, for example Ammonium, into non-toxic urea.

Hirsch JG. (1958) **Bactericidal action of histone**. J Exp Med 108, 925–44

**“The arginine-rich fraction of calf thymus histone (histone B) exerts bactericidal activity on various coliform bacilli and micrococci under certain conditions *in vitro*”.**

**„Die arginin-reiche Fraktion von Kalbsthymus Histon (Histon-B) wirkt *in vitro* an verschiedenen coliformen Bazillen und Mikrokokken unter bestimmten Bedingungen bakterizid“.**

L-Prolin

**N-Acetylcystein und Glutathion**

ist ein Glutathion Prodrug. Die **SH-Gruppe** im N-Acetylcystein-Molekül kann leicht oxidiert werden. Dabei verbinden sich zwei Moleküle über eine Disulfid-Brücke und reaktive sauerstoffhaltige Radikale, z.B.

werden Wasserstoffperoxid (H<sub>2</sub>O<sub>2</sub>) und Hydroxylradikale (OH•) zu unschädlichen Molekülen reduziert. N-acetylcysteine is a Glutathione prodrug.

The **SH group** in the N-acetyl cysteine molecule may be easily oxidized. It combines two molecules via a disulfide bridge, and reactive oxygen-containing radicals, for example, Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and hydroxyl radicals (OH •) are reduced to harmless molecules.

**Glutathion (GSH)**, auch γ-L-Glutamyl-L-cysteinylglycin, ist ein Tripeptid, das aus den drei Aminosäuren Glutaminsäure, Cystein und Glycin gebildet wird.

Glutathione (GSH) = γ-L-glutamyl-L-cysteinyl-glycine, is a tripeptide formed from the three amino acids glutamic acid, cysteine and glycine." <http://de.wikipedia.org/wiki/Glutathion>

Alliin, Cycloalliin, Sulfoxyde, Sulfonsäuren, Histone, Carnosin

Spezielle Peptide und Auto-Vaccine, Peptid Antibiotika, Peptid Hormone, das Proteom und Prione

## B. Aus der Eiweißwelt, from the protein world

**L-Tryptophan / Kynurenin** <http://de.wikipedia.org/wiki/Tryptophan> <http://en.wikipedia.org/wiki/Tryptophan>  
[http://www.ganzimmun.de/seiten/test.php?test\\_id=1435](http://www.ganzimmun.de/seiten/test.php?test_id=1435) <http://lib.bioinfo.pl/paper:1531156>

### Protein- und Peptidhormone

**Neuropeptid der Epiphyse:** Melatonin

**Neuropeptide des Hypothalamus:** Freisetzungshormone für LH/FSH, TSH, ACTH, GH, Somatostatin, Agouti-ähnliches Peptid, Neuropeptid Y, Leptin, Ghrelin.

**Glykoproteinhormone der Adenohypophyse:** Follikelstimulierendes Hormon Follitropin (FSH), Luteinisierendes Hormon Luteotropin (LH), Schilddrüsenstimulierendes Hormon Thyreotropin (TSH), Adrenocorticotropin (ACTH).

**Weitere Adenohypophysäre Hormone:** Wachstumshormon: GH, Prolaktin, Melanozytenstimulierendes Hormon (MSH), Galanin, Kisspeptin.

**Neuropeptide der Neurohypophyse:** Adiuretin (Vasopressin), Oxytocin.

**Hormone der Schilddrüsen:** Kalzitinin.

**Hormone der Nebenschilddrüsen:** Parathormon.

**Hormone des Herzens:** Atrial-Natriuretisches Peptid (ANP).

**Hormone der pankreatischen Inselzellen:** Insulin, Glucagon, Somatostatin, Pankreatisches Polypeptid.

**Peptidhormone des Magen- und Darmtraktes:** Cholecystokin (CCK), Sekretin, Gastrin, Ghrelin, Vasoaktives intestinales Peptid (VIP), Gastroinhibitorisches Peptid (GIP), Peptid Tyrosyl-Tyrosin (PYY).

**Peptidhormone der Leber:** Insulin-like growth factor (IGF),  
Proteohormone der Gonaden: Inhibin, Aktivin.

### Protein and peptide hormones

**Neuropeptide of the epiphysis:** Melatonin

**Neuropeptides of the hypothalamus:** release hormones for LH / FSH, TSH, ACTH, GH, somatostatin, agouti-like peptide, neuropeptide Y, leptin, ghrelin.

**Glycoprotein hormones of the anterior pituitary:** follicle-stimulating hormone, follitropin (FSH), luteinizing hormone Luteotropin (LH), thyroid stimulating hormone thyrotropin (TSH), adrenocorticotrophic hormone (ACTH).

**More Adenohypophysäre hormones:** growth hormone: GH, prolactin, melanocyte stimulating hormone (MSH), galanin, Kisspeptin.

**Neuropeptide the neurohypophysis:** antidiuretic (vasopressin), oxytocin.

**Of thyroid hormones:** calcitonin.

**Hormones of the parathyroid glands:** parathyroid hormone.

**Hormones of the heart:** Atrial natriuretic peptide-(ANP).

**Hormone of the pancreatic islet cell:** insulin, glucagon, somatostatin, pancreatic polypeptide.

**Peptide hormones of the gastro-intestinal tract:** cholecystokin (CCK), secretin, gastrin, ghrelin, vasoactive intestinal peptide (VIP), Gastroinhibitorisches peptide (GIP), peptide tyrosyl-tyrosine (PYY).

**Peptide hormones of the liver:** insulin-like growth factor (IGF),

**Proteohormones of the gonads:** inhibin, activin.

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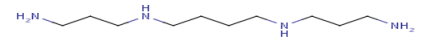
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## Thio(l)ester

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**Spermidin, Spermin** <http://xerlebnishaft.de/bildmethyl-arginin.pdf>



**Spermidin** (A13-26636; 1,4-Diaminobutane, N-(3-aminopropyl)-; 1,4-Butanediamine, N-(3-aminopropyl)-; 1,5,10-Triazadecane; 4-Azaoctamethylenediamine; Spermidine; BRN 1698591; N-(3-Aminopropyl)-1,4-butane-diamine),

**Spermin** (A13-26633; 1,4-Bis(aminopropyl) butanediamine, Spermine; BRN 1750791; 4,9-Diaza-1,12-dodecanediamine; Diaminopropyltetramethylenediamine)

**Erhöhte Spermidin Werte sind Entzündungsmarker bei regenerierenden Geweben.**

**Erniedrigte Spermidin Werte finden sich bei Vergiftungen, Vitaminmangel, Pyrollurie.**

**Diagnostik:** z.B Labor Bayer aktuell

<http://www.labor-bayer.de/newsletter/DrBayer-News-2013-09-web.pdf> ,  
zusätzlich Homocystein-Nachweis

**Therapie:** Soja, Grape fruit, Weizenkeime, Durian-Frucht

**Synthetisiert zu erwerben:** Fa. Sigma - Aldrich (2016) **Spermidine**

<http://www.sigmaaldrich.com/catalog/product/sigma/s2626?lang=de&region=DE&gclid=CJXCmsPYwM4CFU46GwodEh4OIQ>

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<http://www.bloodjournal.org/content/bloodjournal/48/3/469.full.pdf?sso-checked=true>  
« **Comparison with controls revealed that the Sqd/Spm ratio in both whole blood and erythrocytes was significantly higher in the group of cystic fibrosis patients** »

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**“Our findings indicate that autophagy is critical for suppression of memory impairments by spermidine and that polyamines, which are endogenously present, are candidates for pharmacological intervention”.**  
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[https://www.oximity.com/article/Administering\\_Natural\\_Substance\\_Spermidin\\_Stopped\\_Dementia\\_1#.UiQyjn9e1H4](https://www.oximity.com/article/Administering_Natural_Substance_Spermidin_Stopped_Dementia_1#.UiQyjn9e1H4)

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Sigrist SJ, Carmona-Gutierrez D, Gupta VK et al. (2014) **Spermidine-triggered autophagy ameliorates memory during aging**, *Autophagy*, 10,1, 178-179, DOI: 10.4161/auto.26918  
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**„Altogether, spermidine represents a cardio- and vascular-protective autophagy inducer that can be readily integrated in common diets.“**

Presse: <http://www.google.de/search?q=spermidin+graz&hl=de&btnG=Google+Search>

<http://www.google.de/search?q=spermidin+graz&hl=de&btnG=Google+Search>



## L-Arginin

➔ **Bild Methyl-Arginin** <http://www.xerlebnishaft.de/bildmethyl-arginin.pdf>

➔ **L-Arginin** <http://www.erlebnishaft.de/l-arginin.pdf>

## L-Prolin

**L-Prolin** ist eine **nichtessentielle**, sekundäre  **$\alpha$ -Aminosäure**, d.h. L-Prolin hat eine endständige Carboxygruppe und in deren direkter Nachbarschaft die Aminogruppe. L-Prolin wird im Stoffwechsel synthetisiert.

Der Ausgangsstoff von L-Prolin ist **L-Glutamat**. Die Synthese erfolgt unter Energieaufwand mit einem ATP (Adenosintriphosphat) und zwei NADPH (Nicotinamidadenindinukleotidphosphat) aus Pyrrolin-2-carbonsäure [(S)- 3,4-Dihydro- 2H-**pyrrol**- 2-carbonsäure].

Bei **Pflanzen** ist der Gehalt an L-Prolin ein Biomarker für Trocken- und Salz – Stress.

Bei **Tieren** ist L-Prolin beteiligt an der **Bildung von Kollagen** im Bindegewebe und im Knochen. L-Prolin ist die Vorgängersubstanz der im Kollagen des Knochens chemisch gebundenen  $\alpha$ -Aminosäure L-Hydroxyprolin. L-Hydroxyprolin braucht zu seiner Entstehung **Vitamin C**. (Mangelkrankheit = Skorbut).

**L-Prolin moderiert die Protein-Faltung und es puffert die enzymblockierende Funktion von Ionen.**

Im Kollagenen häufig vorkommende Aminosäure-Sequenz: **Glycin-Prolin-Hydroxyprolin**. (Das Medikament Captopril z.B. wird aus L-Prolin hergestellt).

**L- Proline** is a **non-essential secondary  $\alpha$  - amino acid** , that is, L- proline has a terminal carboxyl group and in the direct vicinity of the amino group .

L- proline is synthesized in metabolism.

The starting material of L- proline is **L - glutamate**. The synthesis is carried out under energy expenditure with an ATP (adenosine triphosphate ) and two NADPH ( nicotinamide adenine dinucleotide ) from pyrroline -2 -carboxylic acid [(S) - 3,4- dihydro -2H -**pyrrole**-2 -carboxylic acid] .

For **plants**, the content of L-proline is a biomarker for the dry and salt - stress.

In **animals**, L-proline participates in the **formation of collagen** in the connective tissue and bone. L- Proline is a precursor of the substance is chemically bound in the collagen of the bone,  $\alpha$  - amino acid, L -hydroxyproline . L -hydroxyproline needs of its construction **Vitamin C**. (deficiency disease is scurvy).

**L- proline moderates the protein folding and buffers the enzyme blocking function of ions.**

Frequently occurring amino acid sequence in collagens are **glycine-proline-hydroxyproline**. (The drug Captopril is produced from L- proline)

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« Thus, antioxidants accelerate tumor growth by disrupting the ROS-p53 axis. Because somatic mutations in p53 occur late in tumor progression, antioxidants may accelerate the growth of early tumors or precancerous lesions in high-risk populations such as smokers and patients with chronic obstructive pulmonary disease who receive NAC to relieve mucus production. »

➔ **Tumossuppressorprotein P53** <http://www.erlebnishaft.de/p53.pdf>

## Alpha-Liponsäure

**α-Liponsäure**, (R)-Liponsäure, lipoic acid regelt den Wasserstoff- und Acyl-Gruppen-Transfer z.B. im Pyruvat-Dehydrogenase-Komplex der **Mitochondrien**, dem Verbindungsglied zwischen Glykolyse und Zitronensäurezyklus und dem α-Ketoglutarat-Dehydrogenase-Komplex im Zitronensäurezyklus.

**α-Liponsäure** ist ein Radikalfänger und ein starkes Antioxidans, das im Stoffwechsel verbrauchte Antioxidantien wie Vitamin C, Vitamin E, Coenzym Q10 oder Glutathion regenerieren kann.

**α-lipoic acid**, (R)-lipoic acid, lipoic acid regulates the hydrogen and acyl groups, for example, transfer the pyruvate dehydrogenase complex of the mitochondria, the link between glycolysis and citric acid cycle, and the α-ketoglutarate dehydrogenase complex in the citric acid cycle.

**α-lipoic acid** is a free radical scavenger and powerful antioxidant that can regenerate in the metabolism of consumed antioxidants such as vitamin C, vitamin E, coenzyme Q10 or glutathione.

Quelle: <http://de.wikipedia.org/wiki/Lipons%C3%A4ure>

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## Alliin, Cycloalliin, Sulfoxyde, Sulfonsäuren, sulfatierte Polysaccharide

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### ➔ **Küchenkräuter, Gewürzpflanzen , Kohlararten**

[http://de.wikipedia.org/wiki/Liste\\_der\\_K%C3%BCchenkr%C3%A4uter\\_und\\_Gew%C3%BCrzpflanzen](http://de.wikipedia.org/wiki/Liste_der_K%C3%BCchenkr%C3%A4uter_und_Gew%C3%BCrzpflanzen)  
<http://de.wikipedia.org/wiki/Kohl>

## Protonenpumpenhemmer

- ➔ Pantoprazol, Omeprazol, Esomeprazol, Lansoprazol, Rabeprazol

## Dimerkaptopropansulfonsäure (DMPS) Dimaval®

**Chelatbildner** dienen seit ca. 70 Jahren der Behandlung von Metallvergiftungen. Elektrolyte, Spurenelemente und Schwermetallgifte sind an Eiweiß gebunden.

Ruprecht J (1997) Dimaval® (DMPS) DMPD-HEYL®. Wissenschaftliche Produktmonographie. Heyl Chem.-pharm. Fabrik GmbH

Bayer W (2008) [Durchführung, Referenzbereiche und Interpretation des DMPS-Testes Eine kritische Datenanalyse](http://www.labor-bayer.de/publikationen/11_DrBayer-DMPS-2008.pdf) (pdf; 1,8 MB) [http://www.labor-bayer.de/publikationen/11\\_DrBayer-DMPS-2008.pdf](http://www.labor-bayer.de/publikationen/11_DrBayer-DMPS-2008.pdf)

s.a. Radiogardase-CS, Prussian blue capsules HEYL (2014) <http://www.gifte.de/Antidote/radiogardase.htm>  
[http://www.accessdata.fda.gov/drugsatfda\\_docs/label/2008/021626s007lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2008/021626s007lbl.pdf)

- ➔ **Elektrolyte, PH Wert und Spurenelemente**  
[http://www.xerlebnishaft.de/elektro\\_spur\\_ph.pdf](http://www.xerlebnishaft.de/elektro_spur_ph.pdf)
- ➔ **Intoxikationen** <http://www.kabilahsystems.de/ph.pdf>
- ➔ **Entgiftung** <http://www.kabilahsystems.de/ph.pdf>

## Dimethylsulfoxyd (DMSO)

Dimethylsulfoxid (DMSO) wirkt **antiphlogistisch und analgetisch**. Es ist eine **Schlepper-Substanz**, ein Penetrationsverstärker. Es **moduliert den Eiweiß-Stoffwechsel** in akuten Situationen. Bei Daueranwendung und in Konzentrationen über **10 % ist DMSO Zellgift**.

Stanley J (2001-2014) DMSO <http://www.dmsso.org/subLevels/stanley.htm>

Carls J (2013) DMSO in der Handtherapie.  
<http://www.akademie-fuer-handrehabilitation.de/downloads/dmsso.pdf>

Fischer H (2014) - DMSO - Verborgenes Heilwissen aus der Natur // SPIRIT OF HEALTH  
<https://www.youtube.com/watch?v=gOdZGhnyycg>

Fischer H (2014) Das DMSO-Handbuch: Verborgenes Heilwissen aus der Natur  
<http://www.amazon.de/Das-DMSO-Handbuch-Verborgenes-Heilwissen-Natur/dp/3981525515>

## MSM (Methylsulfonmethan) = organischer Schwefel

z.B. MSM **evtl.** plus Glucosamin, Omega-3-Fettsäuren und Mangan **bei Arthritis**.

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## H<sub>2</sub>S und NO

Shatalin K, Shatalina E, Mironov A et al. (2011) **H<sub>2</sub>S: A Universal Defense Against Antibiotics in Bacteria**. Science 334(6058), 986-990. <http://www.sciencemag.org/content/334/6058/986>  
"The mechanism of gas-mediated antibiotic resistance relies on mitigation of oxidative stress imposed by antibiotics".

## Sulfatierte Polysaccharide

**Carrageen** ist die Sammelbezeichnung einer Gruppe von antiviral wirkenden, **langkettigen sulfatierten Polysacchariden (Kohlenhydraten)**, die in Rotalgenzellen vorkommen.

González ME, Alarcón B, Carrasco L (1987) **Polysaccharides as Antiviral Agents**: Antiviral Activity of Carrageenan. Antimicrobial Agents and Chemotherapy. 31(9), 1388-1393

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<http://www.google.com/patents/EP0464759A2?cl=de>

➔ Walter T Makroalgen: Wirkstoffe und Potenziale  
<http://fileserv.futureocean.org/wissenstransfer/thorsten-walter.pdf>

## Histone

**Histone** sind basische Eiweißstoffe, die im Zellkern von Eukaryoten für die Verpackung der Nukleinsäureketten und für die Expression mancher auf ihr codierter Gene zuständig sind.

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## Carnosin

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## Peptid-Antibiotika, Peptid-Transmitter und biogene Proteine

„Fast alle Aminosäuren existieren in zwei zueinander spiegelbildlichen Versionen, D- und L-Form genannt.

Höhere Lebewesen nutzen gewöhnlich nur die L-Variante.

Mikrobielle Zellwände und Peptid-Antibiotika enthalten auch D-Aminosäuren, rechtshändige Aminosäuren.

Bakterien benutzen D- Aminosäuren für ihre Kommunikation und beim Aufbau ihrer Biofilm-Organisationen.

Der Biofilm Klebstoff Peptidoglykan enthält D-Alanin, D-Glutamat sowie vereinzelt D-Serin.

Bakterien verkitten Peptidoglykan über Artgrenzen hinweg mit Hilfe von D-Methionin und D-Leucin.

Rechtshändige Aminosäuren, D-Aminosäuren bewahren Peptide oder Proteine davor, durch die Enzyme des Wirtes oder eines Feindes, die nur die Bindung zwischen den L-Formen spalten können, sofort abgebaut zu werden.

D-Aspartat ist ein Botenstoff, ein Neurotransmitter im menschlichen Gehirn und es ist an der Entwicklung des menschlichen Gehirns beteiligt.

Hirnzellen erzeugen ein Enzym, das L-Serin in D-Serin verwandelt.

D-Serin scheint für die geistige Gesundheit von Bedeutung zu sein und es aktiviert gemeinsam mit L-Glutamat neuronale Moleküle, die für die neuronale Plastizität entscheidend sind“.

"Almost all amino acids exist in two mutually mirror-image versions, called D- and L-form. Living beings usually only use the L variant.  
Microbial cell walls and peptide antibiotics contain D-amino acids, right-handed amino acids.  
Bacteria use D-amino acids for their communication and to build their biofilm organizations. The biofilm adhesive peptidoglycan contains D-alanine, D-glutamate and occasionally D-serine.  
Bacterial spatula peptidoglycan across species barriers with the help of D-methionine and D-leucine.  
Right-handed amino acids, D-amino acids preserve peptides or proteins from being degraded by the enzymes of the host or an enemy that can only cleave the bond between the L forms immediately.  
D-aspartate is a neurotransmitter, a neurotransmitter in the human brain and it is involved in the development of the human brain.  
Brain cells produce an enzyme that converts L-serine in D-serine.  
D-serine appears to be essentially for mental health and it activates together with L-glutamate neuronal molecules that are critical for neuronal plasticity.  
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**“Die Erfindung betrifft die Verwendung von Substanzen, die an den bakteriellen Translationsfaktor EF-Tu binden, zur Hemmung des Aufbaus eines Cytoskeletts in Bakterienzellen und zur Herstellung antibakterieller Mittel. Weiterhin betrifft die Erfindung antibakterielle Mittel, die Teilabschnitte der Aminosäuresequenzen der Domänen 2 und/oder 3 eines bakteriellen EF-Tu Proteins mit einer Länge von vorzugsweise 4-20 Aminosäuren enthalten”.**

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## Komplement, Proteo-Hormone, Hormone

- ➔ **Komplement** <http://www.xerlebnishaft.de/complement.pdf>
- ➔ **Proteo-Hormone** <http://de.wikipedia.org/wiki/Proteohormone>
- ➔ **Polyphenole** <http://www.kabilahsystems.de/polyphenole.pdf>

## Probiotika, Zytoskelett, Proteom

- Probiotika <http://www.kabilahsystems.de/probiotika.pdf>
- Zytoskelett <http://www.xerlebnishaft.de/zytoskelett.pdf>
- The Human Protein Atlas <http://www.proteinatlas.org/>
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## Prione, Virulenzinhibitoren

- Prione <http://www.erlebnishaft.de/prione.pdf>
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## L-Tryptophan, L-Kynurenin und Indoleamine 2,3-dioxygenase (IDO)

**Indoleamine 2,3-dioxygenase (IDO) oxidiert L-Tryptophan und D-Tryptophan zu N-Formyl-L-Kynurenin. Auch Superoxid kann dabei Sauerstoffdonator sein.**

**L-Tryptophansubstitution erst nach der Behandlung einer aktiven Entzündung, weil bei Entzündungen vermehrt das toxische Kynurenin gebildet wird. Zuerst antientzündlich behandeln!**

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