

**I LITERATURVERZEICHNIS**

- ABBOTT, W. W., J. R. COUCH & R. L. ATKINSEN (1969):  
The incidence of foot-pad dermatitis in young turkeys fed high levels of soybean meal.  
*Poultry Science* 48, 2186-2188.
- ALBERS, N., W. HEIMBECK, Th. KELLER, J. SEEHAWER & T. D. TRAN (2001):  
Vitamine in der Tierernährung.  
In: ARBEITSGEMEINSCHAFT FÜR WIRKSTOFFE IN DER TIERERNÄHRUNG e. V.  
(AWT) (Hrsg.). Agrimedia GmbH, Bergen & Deutscher Fachverlag Frankfurt am Main,  
[www.awt-feedadditives.de/fileadmin/publikationen/Broschuere-Vitamine.pdf](http://www.awt-feedadditives.de/fileadmin/publikationen/Broschuere-Vitamine.pdf)  
(Stand: 11.2004)
- ALLEN, T. D. & C. S. POTTER (1975):  
Desmosomal form, fate and function in mammalian epidermis.  
*Journal of Ultrastructure Research* 51, 94-105.
- AMMERMANN, C. B., D. H. BAKER & A. J. LEWIS (1995):  
Bioavailability of nutrient for animals: Amino acids, minerals, vitamins.  
Academic Press, Inc., San Diego, Chapter G, 410-411, 420.
- ARENDS, L. G. (1970):  
Gross and microscopic lesions induced by biotin deficiency in the poult.  
*Poultry Science* 49, 1364 (abstract).
- ARENDS, L. G., E.W. KIENHOLZ, J. V. SHUTZE & D. D. TAYLOR (1971):  
Effect of supplemental biotin on reproductive performance of turkey breeder hens and  
its effect on the subsequent progeny's performance.  
*Poultry Science* 50, 208-214.
- ARINZE, J. C., & S. P. MISTRY (1971):  
Activities of some biotin enzymes and certain aspects of gluconeogenesis during  
biotin deficiency.  
*Comparative Biochemistry and Physiology* 38b, 285-294.
- ATKINSON, R. L., J. W. BRADLEY, J. R. COUCH, T. M. FERGUSON & W. F. KRUEGER  
(1976):  
Relationship of supplemental biotin, phosphorus level and calcium level to  
reproductive performance of turkeys.  
*Nutrition Reports International* 13, 237-246.
- ATUAHENE, Y. O.; P. E. BERNIER; W. B. ROUSH & G. H. ARSCOTT (1984)  
Effect of biotin on dermatitis and hatchability in dwarf and normal size single comb  
white leghorn type.  
*Poultry Science*, 63(3), 580-582.
- AUSTIC, R. E. & M. L. SCOTT (1984):  
Biotin.  
In: M. S. HOFSTAD, H. J. BARNES, B. W. CALNEK, W. M. REID & H. W. YODER, Jr  
(eds.): *Diseases of poultry*. 8. ed., American Association of Avian Pathologists, Iowa  
State University Press, Ames, Iowa, USA, 54-55.

- BAIN, S. D., J. W. NEWBREY & B. A. WATKINS (1988):  
Biotin deficiency may alter tibiotarsal bone growth and modeling in broiler chicks.  
*Poultry Science* 67, 590-595.
- BAKER, J. R. (1946):  
The histochemical recognition of lipine.  
*Quarterly Journal of Microscopical Science* 87, 441-470.
- BALNAVE, D. (1970):  
Essential fatty acids in poultry nutrition.  
*World's Poultry Science Journal* 26, 442-460.
- BALNAVE, D. (1975):  
The developing of a biotin deficiency in domestic fowl given wheat-based diets.  
*British Journal of Nutrition* 34, 83-90.
- BARNETT, R. J. & A. M. SELIGMAN (1952):  
Histochemical demonstration of protein-bound sulfhydryl-groups.  
*Science* 116, 323-327.
- BEHNE, M. J., N. P. BARRY, K. M. HANSON, I. ARONCHIK, R. W. CLEGG, E. GRATTON, K. FEINGOLD, W. M. HOLLERAN, P. M. ELIAS & T. M. MAURO (2003):  
Neonatal development of the stratum corneum pH gradient: Localization and mechanisms leading to emergence of optimal barrier function.  
*The Journal of Investigative Dermatology* 120(6), 998-1111.
- BEHNE, M. J., Y. UCHIDA, T. SEKI, P. O. DE MONTELLO, P. M. ELIAS & W. M. HOLLERAN (2000):  
Omega-hydroxyceramides are required for corneocyte lipid envelope (CLE) formation and normal epidermal permeability barrier function.  
*The Journal of Investigative Dermatology* 114(1), 185-192.
- BELL, D. J. & B. M. FREEMAN (1971):  
Physiology and biochemistry of the domestic fowl. Vol. 3.  
Academic Press, New York, 1153-1488.
- BENECKE, N. (1994):  
Der Mensch und seine Haustiere. Die Geschichte einer jahrtausendealten Beziehung.  
Verlag Theiss, Stuttgart, 392-393.
- BERG, C. C. (1998):  
Foot pad dermatitis in broilers and turkeys—prevalence, risk factors and prevention.  
Uppsala, Sweden, Swedish University of Agricultural Sciences, Department of Clinical Chemistry, Dissertation.
- BITSCH, R. & K. BARTEL (1994):  
Biotin – wissenschaftliche Grundlagen, klinische Erfahrungen und therapeutische Einsatzmöglichkeiten.  
In: R. BITSCH (Hrsg.): Biotin. Wissenschaftliche Verlagsgesellschaft, Stuttgart, 5-135.
- BITSCH, R., A. DERSI & D. HÖTZEL (1985):  
Biotin deficiency and biotin supply.  
*Biotin*. Vol. 447, *Annals of the New York Academy of Science* 447, 133-139.

BMVEL: BUNDESMINISTERIUM FÜR VERBRAUCHERSCHUTZ, ERNÄHRUNG UND LANDWIRTSCHAFT (2002):

Zweite Bekanntmachung der deutschen Übersetzung von Empfehlungen des Ständigen Ausschusses des Europäischen Übereinkommens zum Schutz von Tieren in landwirtschaftlichen Tierhaltungen.  
[www.verbraucherministerium.de](http://www.verbraucherministerium.de) (Stand: 4.2004)

BOAS, M. (1927):

The effect of desiccation upon the nutrition properties of eggwhite.  
Biochemical Journal 21, 712.

BOETTICHER, H. von (1929):

Morphologische und phylogenetische Studien über die hornige Fussbekleidung der Vögel.  
Jenaische Zeitschrift für Naturwissenschaft 64, 377-448.

BONJOUR, J. P. (1977):

Biotin in man's nutrition and therapy – a review.  
International Journal for Vitamin and Nutrition Research 47(2), 107-118.

BONJOUR, J. P. (1991):

Biotin.  
In: L. J. MACHLIN (ed.):Handbook of vitamins. 2. ed., Department of Vitamins and Clinical Nutrition, Hoffmann-La Roche, Inc., Nutley, New Jersey, 393- 426.

BOUWSTRA, J. A., F. E. R. DUBBELAAR, G. S. GOORIS & M. PONEC (2000):

The lipid organisation in the skin barrier.  
Acta Dermatologica Venerologica (Stockholm) 208, 23-30 (Suppl.).

BOUWSTRA, J. A., G. S. GOORIS, F. E. R. DUBBELAAR, A. M. WEERHEIM, A. P. IJZERMAN & M. PONEC (1998):

Role of ceramide 1 in the molecular organization of the stratum corneum lipids.  
Journal of Lipid Research 39, 186-196.

BRACEWELL, C. (1982):

Slower growth rates to cut leg problems?  
Poultry World (Jan.) 14, 12-13.

BRADLEY, H. W., R. L. ATKINSON & W. F. KRUEGER (1976):

Relationship of biotin to reproductive performance of leghorn-type hens.  
Poultry Science 55, 2490-2492.

BRAGULLA, H., K. D. BUDRAS & M. STEDE (1991):

Zum Aufbau der Epidermis an der Bauchhaut des Seehundes (*Phoca vitulina L.*).  
Anatomia, Histologia, Embryologia 20, 267.

BRAGULLA, H., J. REESE & CH. MÜLLING (1994):

Histochemical and immunohistological studies of the horn quality of the equine hoof.  
Anatomia, Histologia, Embryologia 23, 44-45.

BRAMWELL R. K., C. D. McDANIEL, J. L. WILSON & B. HOWARTH (1996):

Age effect of male and female broiler breeders on sperm penetration of the perivitelline layer overlying the germinal disc.  
Poultry Science 75(6), 755-762.

- BREWER, L. E. & H. M., EDWARDS Jr. (1972):  
Studies on the biotin requirement of broiler breeders.  
*Poultry Science* 51, 619-624.
- BRITISH UNITED TURKEYS LIMITED (2001):  
[www.but.co.uk](http://www.but.co.uk) (Stand: 11.2004)
- BRUSH, A. H. (1996):  
On the origin of feathers.  
*Journal of Evolutionary Biology* 9, 131-142.
- BUCHER, O. & H. WARTENBERG (1989):  
Haut und Anhangsgebilde.  
In: O. BUCHER & H. WARTENBERG (Hrsg.): *Cytologie, Histologie und mikroskopische Anatomie des Menschen*. 11. Aufl., Verlag Hans Huber, Bern, Stuttgart, Toronto, 557-573.
- BUDA, S. (2000):  
Foot pad lesions and the influence of biotin in turkeys.  
In: H. M. HAFEZ (ed.): *3. International Symposium on Turkey Diseases Berlin*. Verlag DVG, Giessen, 88-93.
- BUDDENBROCK, W. von (1956):  
Der Wasserhaushalt.  
Vergleichende Physiologie, Band 3: Ernährung, Wasserhaushalt und Mineralhaushalt. Verlag Birkhäuser, Basel, Stuttgart, 425-551.
- BUDRAS, K.-D. & H. BRAGULLA (1991):  
Besonderheiten des Membrane Coating Materials (MCM; Kittsubstanz zwischen Keratinozyten) im harten Horn des Pferdehufes.  
*Verhandlungen der Anatomischen Gesellschaft* 85 (Anat. Anz. Suppl. 170), 435-436.
- BUDRAS, K.-D., H. GEYER, J. MAIERL & CH. MÜLLING (1998):  
Anatomy and structure of hoof horn. (Workshop report).  
In: CH. J. LISCHER & P. OSSENT (Hrsg.): *10. International Symposium on Lameness in Ruminants*. Lucerne, Switzerland, 176-179.
- BUDRAS, K.-D., R. L. HULLINGER & W. O. SACK (1989):  
Light and electron microscopy of keratinization in the laminar epidermis of the equine hoof with reference to laminitis.  
*American Journal of Veterinary Research* 50, 1150-1160.
- BUDRAS, K.-D., CH. MÜLLING & A. HORROWITZ (1996):  
Rate of keratinization of the wall segment of the hoof and its relation to width and structure of the zona alba (white line) with respect to claw disease in cattle.  
*American Journal of Veterinary Research* 57, 444-455.
- BUDRAS, K. D.; C. SCHIEL, C. K. W. MÜLLING & B. PATAN (2002):  
Method for preparing thin sections of untreated equine hoof horn for electron microscopic examination.  
*Microscopy Research and Technique* 58, 114-120.
- BUDRAS, K.-D. & M. SEIDEL (1992):  
Die segmentale Gliederung und Hornstruktur an der Kralle des Hundes.  
*Anatomia, Histologia, Embryologia* 21(4), 348-363.

- BYRNE, C., M. HARDMAN & K. NIELD (2003):  
Covering the limb – formation of the integument.  
*Journal of Anatomy* 202, 113-124.
- CAMBROSIO MANN, M., A. E. FRIESS & M. H. STOFFEL (2003):  
Blood-tissue barriers in the male reproductive tract of the dog: A morphological study using lanthanum nitrate as an electron-opaque tracer.  
*Cells Tissues Organs* 174, 162-169.
- CANE, A. K. & R. I. C. SPEARMAN (1967):  
A histochemical study of keratinization in the domestic fowl (*Gallus gallus*).  
*Journal of Zoology* 153, 337-352.
- CHARLES, O. W. & J. FORTUNE (1977):  
The influence of diet and litter management on foot-pad lesions in turkey pouls.  
*Poultry Science* 56, 1348 (abstract).
- CHAUCHAN, J. & K. DAKSHINAMURTI (1988):  
Role of human serum biotinidase as biotin-binding protein.  
*Journal of Biochemistry* 256, 265-270.
- CHAUHAN, J. & K. DAKSHINAMURTI (1991):  
Transcriptional regulation of the glucokinase gene by biotin in starved rats.  
*Journal of Biological Chemistry* 266, 10035-10038.
- CHAVEZ, E. & F. H. KRATZER (1972):  
Prevention of foot pad dermatitis in pouls with methionine.  
*Poultry Science* 51, 1545-1548.
- CHEN, F., S. L. NOLL & P. E. WAIBEL (1994):  
Dietary biotin and turkey breeder performance.  
*Poultry Science* 73, 682-686.
- CHUONG, C. M., L. HOU, P.J. CHEN, P. WU, N. PATEL & Y. CHEN (2001):  
Dinosaur's feather and chicken's tooth? Tissue engineering of the integument.  
*Journal of European Academy of Dermatology and Venereology* Jul.-Aug. 11(4), 286-292.
- CLAASEN, H. L. (1992):  
Management factors in leg disorders.  
In: C. C. WHITEHEAD (ed.): *Bone biology and skeletal disorders in poultry*.  
23. Poultry Science Symposium. Carfax Publishing Company, Oxfordshire, 195-212.
- CLARK, S., G. HANSEN, P. McLEAN, P. BOND, JR., W. WAKEMAN, R. MEADOWS & S. BUDA (2002):  
Pododermatitis in turkeys.  
*Avian Diseases*, 46(4), 1038-1044.
- COATES, M. E., J. E. FORD & G. F. HARRISON (1968):  
Intestinal synthesis of vitamins of the B complex in chicks.  
*The British Journal of Nutrition* 22, 493-500.
- CODERICH, L., O. LOPEZ, A. DE LA MAZA & J. L. PARRA (2003):  
Ceramides and skin function.  
*American Journal of Clinical Dermatology*, 4(2), 107-129.

- COOK, M. E., PATTERSON P. H. & M. L. SUNDE (1984):  
Leg deformities: Inability to increase severity by increasing body weight of chicks and pourets.  
*Poultry Science* 63(4), 620-627.
- COUCH, J. R., W. W. CRAVENS, C. A. ELVEHJEM & J. G. HALPIN (1947):  
Biotin deficiency in the newly hatched chick.  
*Poultry Science* 26, 536 (abstract).
- COUCH, J. R., W. W. CRAVENS, C. A. ELVEHJEM & J. G. HALPIN (1948):  
Studies on the role of biotin in embryonic development of the domestic fowl.  
*Poultry Science* 27, 657 (abstract).
- COWAN, M. J., D. W. WARAS, S. PACKMAN, M. YOSHINO, L. SWEETMAN & W. NYHAN (1979):  
Multiple biotin-dependent carboxylase deficiencies associated with defects in T-cell and B-cell immunity.  
*Lance* ii, 115-118.
- CRAVENS, W. W., W. H. McGIBBON & E. E. SEBESTA (1944):  
Effect of biotin deficiency on embryonic development in the domestic fowl.  
*The Anatomical Record* 90, 55-64.
- CUNICO, R. L., H. I. MAIBACH, H. KHAN & E. BLOOM (1977):  
Skin barrier properties in the newborn. Transepidermal water loss and carbon dioxide emission rates.  
*Biology of the Neonate: Foetal and Neonatal Research* 32, 177-182.
- DÄMMRICH, K (1990):  
Wachstum und Anpassung.  
In: H. STÜNZI & E. WEISS (Hrsg.): Allgemeine Pathologie für Tierärzte und Studierende der Tiermedizin. 8. Aufl., Verlag Paul Parey, Berlin, Hamburg, 274-290.
- DÄMMRICH, K. & H. LOPPNOW (1990):  
Stoffwechselstörungen.  
In: H. STÜNZI & E. WEISS (Hrsg.): Allgemeine Pathologie für Tierärzte und Studierende der Tiermedizin. 8. Aufl., Verlag Paul Parey, Berlin, Hamburg, 64-153.
- DAKSHINAMURTI, K., L. E. CHALIFOUR & R. J. BHULLAR (1985):  
Requirement for biotin and the function of biotin in cells in culture.  
In: K. DAKSHINAMURTI & H. N. BHAGAVAN (eds.): Biotin. Vol. 447, Academy of Sciences, New York, 38-55.
- DAKSHINAMURTI, K. & J. CHAUCHAN (1989):  
Biotin.  
In: G. D. AURBACH (ed.): Vitamins and hormones 45, Academic Press, Inc., San Diego, USA, 337-385.
- DAKSHINAMURTI, K. & C. CHEAH-TAN (1968):  
Liver glucokinase of biotin deficient rat.  
*Canadian Journal of Biochemistry* 46, 75-80.
- DAKSHINAMURTI, K. & S. LITVAK (1970):  
Biotin and protein synthesis in rat liver.  
*The Journal of Biological Chemistry* 245, 5600-5605.

- DEODHAR, A. D. & S. P. MISTRY (1969):  
Gluconeogenesis in biotin deficiency: In vitro synthesis of pyruvate holocarboxylase in biotin-deficient rat liver.  
Biochemical and Biophysical Research Communications 34, 755-759.
- DOBSON, D. C. (1970):  
Biotin requirement of turkey poulets.  
Poultry Science 49, 546-553.
- DOLLERY, C. (1991):  
Biotin.  
In: A. R BOOBIS, D. BURLEY, D. M. DAVIES, , D. S. DAVIES, P. I. HARRISON, M. L' É. ORNE, B. K. PARK & L. I. GOLDBERG (eds.): Therapeutic drugs. Churchill, Livingston.
- DOUGLAS, J. & N. BUDDIGER (2002):  
How today's social, political, and consumer-driven environment influences the business objectives of the primary breeders: Genotype, environment, and nutrition interactions.  
In: H. M. HAFEZ (ed.): 4. International Symposium on Turkey Diseases Berlin, Verlag DVG, Giessen, 1-11.
- DOWNING, D. T. (1992):  
Lipid and protein structures in the permeability barrier of mammalian epidermis.  
Journal of Lipid Research 33, 301-313.
- DOWNING, D. T., M. E. STEWART, P. W. WERTZ, S. W. COLTON, W. ABRAHAM & J. S. STRAUSS (1987):  
Skin lipids: An update.  
The Journal of Investigative Dermatology 88(3), 2-6 (supplements).
- DRESSLER, D. (1980):  
Probleme im Bereich der Zusatzstoff-Analytik.  
Kraftfutter, 63. Jahrgang, Heft 9/10.
- DU VIGNEAUD, V., D. B. MELVILLE, K. FOLKERS, D. E. WOLF, R. MOZINGO, J. C. KERESZTESY & S. A. HARRIS (1942):  
The structure of biotin: A study of dethiobiotin.  
The Journal of Biological Chemistry 146, 475-485.
- EKSTRAND, C. & B. ALGERS (1997):  
Rearing conditions and foot-pad dermatitis in swedish turkey poulets.  
Acta Veterinaria Scandinavia 38, 167-174.
- EKSTRAND, C., B. ALGERS & J. SVEDBERG (1997):  
Rearing conditions and foot-pad dermatitis in swedish broiler chickens.  
Preventive Veterinary Medicine 31, 167-174.
- EKSTRAND, C., T. E. CARPENTER, I. ANDERSON & B. ALGERS (1998):  
Prevalence and control of foot-pad dermatitis in broilers in Sweden.  
British Poultry Science 39, 318-324.

- ELIAS, P. M (1981):  
Lipids and the epidermal permeability barrier.  
Archives of Dermatological Research 270, 95-117.
- ELIAS, P. M. (1983):  
Epidermal lipids, barrier function, and desquamation.  
The Journal of Investigative Dermatology 80, 44-49.
- ELIAS, P. M., M. FARTASCH, D. CRUMRINE, M. BEHNE, Y. UCHIDA & W. M. HOLLERAN (2000):  
Origin of the corneocyte lipid envelope (CLE): Observations in harlequin ichthyosis and cultured human keratinocytes.  
The Journal of Investigative Dermatology, Letters to the Editor, 115(4), 765-769.
- ELIAS, P. M., M. FARTASCH, Y. UCHIDA & W. M. HOLLERAN (1999):  
Observations on the structure, function, and origin of the lipid-bound envelope.  
The Journal of Investigative Dermatology 112, 542 (abstract).
- ELIAS, P. M. & D. S. FRIEND (1975):  
The permeability barrier in mammalian epidermis.  
Journal of Cell Biology 65, 185-191.
- ELIAS, P. M. & G. K. MENON (1991):  
Structural and lipid biochemical correlates of the epidermal permeability barrier.  
Advances in Lipid Research 24, 1-26.
- ELIAS, P. M., G. K. MENON, S. GRAYSON & B. E. BROWN (1988):  
Membrane structural alterations in murine stratum corneum: Relationship to the localisation of polar lipids and phospholipase.  
The Journal of Investigative Dermatology 91, 3-10.
- ELIAS, P. M., G. K. MENON, S. GRAYSON, B. E. BROWN & S. J. REHFELD (1987):  
Avian sebokeratocytes and marine mammal lipokeratinocytes: Structural, lipid biochemical, and functional considerations.  
The American Journal of Anatomy 180, 161-177.
- ELLERBROCK, S. (2000):  
Beurteilung verschiedener Besatzdichten in der intensiven Putenmast unter besonderer Berücksichtigung ethologischer und gesundheitlicher Aspekte.  
Hannover, Tierärztliche Hochschule, Institut für Tierhygiene und Tierschutz und Nutztierethologie, Dissertation.
- ELO, H. A., M. S. KULOMAA & P. J. TUOHIMAA (1979):  
Progesterone-independent avidin induction in chick tissues caused by tissue injury and inflammation.  
Acta Endocrinologica (Copenhagen) 90(4), 743-752.
- EVANS, N. J. & N. RUTTER (1986):  
Development of the epidermis in the newborn.  
Biology of the Neonate: Foetal and Neonatal Research 49, 74-80.
- F. HOFFMANN-LA ROCHE LTD, Basel, Switzerland (2001):  
Adding value to the poultry industry.  
[www.roche.com/vitamins](http://www.roche.com/vitamins), (Stand: 04.2004)

- FERGUSON, T. M., C. H. WHITESIDE, C. R. CREGER, M. L JONES, R. L. R. L. ATKINSON & J. R. COUCH (1961):  
B-Vitamin deficiency in the mature turkey hen.  
*Poultry Science* 40, 1151-1159.
- FISHER, C. J., L. W. KNAPP & R. H. SAWYER (1988):  
Retinoic acid induction of featherlike structures from reticulate scales.  
*Teratology* (Oct.); 38(4), 321-328.
- FRANKE, W. W. (1993):  
Intermediate filaments and associated proteins.  
In: T. KREIS & R. VALE: Guidebook to the cytoskeletal and motor proteins.  
University Press, Oxford, 137-143.
- FREINKEL, R. K. & T. N. TRACZYK (1983):  
Acid hydrolases of the epidermis: Subcellular localization and relationship to cornification.  
*The Journal of Investigative Dermatology* 80, 441-446.
- FREINKEL, R. K. & T. N. TRACZYK (1985):  
Lipid composition and acid hydrolase content of lamellar granules of fetal rat epidermis.  
*The Journal of Investigative Dermatology* 85, 295-298.
- FRIEDRICH, W. (1987):  
Handbuch der Vitamine.  
Verlag Urban & Schwarzenberg, München, Wien, Baltimore, 486-519.
- FRIGG, M. (1976):  
Bioavailability of biotin in cereals  
*Poultry Science* 55, 2310-2318
- FRIGG, M. (1984):  
Available biotin content of various feed ingredients  
*Poultry Science* 63, 750-753.
- FRIGG, M., J. BROZ & K. STREIFF (1984):  
Studies on biotin deposition of hen's eggs.  
In: 17. World's Poultry Congress Helsinki, Finland, 8-12.08.1984, 420-421.
- FRIGG, M. & G. BRUBACHER (1976):  
Biotin deficiency in chicks fed a wheat-based diet.  
*International Journal for Vitamin and Nutrition Research* 46, 314-321.
- FRIGG, M. & H. P. ROHR (1978):  
Stereological composition of the liver of biotin deficient and control chicks.  
*International Journal for Vitamin and Nutrition Research* 48(4), 348-351.
- FRIGG, M., O. C. STRAUB & D. HARTMANN (1993):  
The bioavailability of supplemental biotin in cattle.  
*International Journal for Vitamin and Nutrition Research* 63, 122-128.
- FRIGG, M. & J. TORHORST (1980):  
Histological and cytological alterations in the skin of biotin-deficient chicks.  
*Research in Veterinary Science* 28(1), 17-24.

- FRIGG, M. & H. WEISER (1974):  
Biotin deficiency in chicks – clinical and chemical alterations.  
F. Hoffmann-La Roche & Co. Ltd., Basel, Switzerland.
- FRITHIOF, L. & J. WERSÄLL (1965):  
A highly ordered structure in keratinizing human oral epithelium.  
*Journal of Ultrastructure Research* 12, 31-379.
- FRITSCHE, A., G. A. MATHIS & F. R. ALTHAUS (1991):  
Pharmakologische Wirkung von Biotin auf Epidermiszellen.  
*Schweizer Archiv für Tierheilkunde* 133, 277-283.
- GAZDZINSKI, P. (2001):  
Hepatic lipidosis in turkey hen breeding candidates.  
*Turkeys*, 49, 24. Technical Turkey Conference, 29-30.
- GERAEDETS, L. H. J. (1983):  
Leg disorders caused by litter conditions and the influence of the type of litter and of  
litter cultivations on the results of turkeys.  
*Turkeys* (Sept./Oct.), 20-25.
- GIROUD, A & C. P. LEBLOND (1951):  
The keratinization of epidermis and its derivates, especially the hair, as shown by  
X-ray diffraction and histochemical studies.  
*Annals of the New York Academy of Science* 53, 613-625.
- GLÄTTLI, H. R., J. POHLENZ, K. STREIFF, & F. EHRENSBERGER (1975):  
Klinische und morphologische Befunde beim experimentellen Biotinmangel.  
*Zentralblatt für Veterinärmedizin* 22, 102-116.
- GRAYSON, S., A. G. JOHNSON-WINEGAR, B. U. WINTROUB; R. R. ISSEROFF,  
E. H. EPSTEIN & P. M. ELIAS (1985):  
Lamellar body-enriched fractions from neonatal mice: Preparative techniques and  
partial characterization.  
*The Journal of Investigative Dermatology* 85, 289-294.
- GREEN, N. M. (1963):  
The use of <sup>14</sup>C biotin for kinetic studies and for assay.  
*Journal of Biochemistry* 89, 585-591.
- GREEN, N. M. (1975):  
Avidin.  
*Advances in Protein Chemistry* 29, 85-133.
- GYÖRGY, P. (1931):  
Rachitis und andere Avitaminosen.  
*Zeitschrift für Ärztliche Fortbildung* 28, 377.
- GYÖRGY, P. (1939):  
The curative factor (vitamin H) for egg white injury, with particular reference to its  
presence in different foodstuffs and in yeast.  
*The Journal of Biological Chemistry* 31, 733.

- GYÖRGY, P. & B. W. LANGER (1968):  
II. Chemistry and V. Occurrence in food.  
In: W. H. SEBRELL & P. S. HARRIS: The vitamins. Chemistry, physiology, pathology, methods. 2. ed., Academic Press, New York, London, 263-278, 285-288.
- HAFEZ, M. H. & S. JODAS, (1997):  
Putenkrankheiten.  
Verlag Enke.
- HAFEZ, M. H., K. WÄSE, S. HAASE, T. HOFFMANN, O. SIMON & V. BERGMANN (2004):  
Leg disorders in various lines of commercial turkeys with especial attention to pododermatitis.  
In: H. M. HAFEZ (ed.): 5. International Symposium on Turkey Diseases Berlin, Verlag DVG, Giessen, 11-18.
- HARMS, R. H., B. L. DAMRON & C. F. SIMPSON (1977):  
Effect of wet litter and supplemental biotin and/or whey on the production of foot pad dermatitis in broilers.  
*Poultry Science* 56(1), 291-296.
- HARMS, R. H. & C. F. SIMPSON (1975):  
Biotin deficiency as a possible cause of swelling and ulceration of foot pads.  
*Poultry Science* 54(5), 1711-1713.
- HARMS, R. H. & C. F. SIMPSON (1977):  
Influence of wet litter and supplemental biotin on foot pad dermatitis in turkey poultts.  
*Poultry Science* 56(6), 2009-2012.
- HARMS, R. H. & C. F. SIMPSON (1982):  
Relationship of growth depression from salt deficiency and biotin intake to foot pad dermatitis of turkey poultts.  
*Poultry Science* 61(10), 2133-2135.
- HARMS, R. H. & R. W. WINTERFIELD (1985):  
Marginal biotin deficiency in broiler breeders: A possible factor to poor fertility.  
*Feedstuffs* 57, 22.
- HASHIMOTO, K. (1971a):  
Ultrastructure of the human toenail: II. Keratinization and formation of the marginal band.  
*Journal of Ultrastructure Research* 36, 391-410.
- HASHIMOTO, K. (1971b):  
Ultrastructure of the human toenail: III. Cell migration, keratinization and formation of the intercellular cement.  
*Archiv für Dermatologische Forschung* 240, 1-22.
- HASHIMOTO, K. (1971c):  
Intercellular spaces of the human epidermis as demonstrated with lanthanum.  
*The Journal of Investigative Dermatology* 57(1), 17-31.
- HASHIMOTO, K. (2000):  
Regulation of keratinocyte function by growth factors.  
*Journal of Dermatological Science* 24 (Suppl. 1), S46-S50.

HAYWARD, A. F. (1983):

The permeability of the epithelium of the skin of fetal rats demonstrated with a lanthanum-containing solution.  
*Journal of Anatomy* 136(2), 379-388.

HEIM, G. (1990):

Beinschwäche-Syndrom bei Masdputen: Einflüsse von verschiedenen Vitamin D-Metaboliten und von Vitamin C.  
München, Tierärztliche Fakultät der Ludwig-Maximilians-Universität, Dissertation.

HIRAO, T., M. DENDA & M. TAKAHASHI (2001):

Identification of immature cornified envelopes in the barrier-impaired epidermis by characterization of their hydrophobicity and antigenicities of the components.  
*Clinical and Experimental Dermatology* 10, 35-44.

HONGYAN, Z. & L. NISWANDER (1996):

Requirement for BMP signaling in interdigital apoptosis and scale formation.  
*Science* 272, 738-741.

HORSTMANN, E & A. KNOOP (1958):

Elektronenmikroskopische Untersuchungen an der Epidermis. I. Rattenpfote.  
*Zeitschrift für Zellforschung und mikroskopische Anatomie* 47, 348-362.

HUANG, R.T.C. (1978):

Cell adhesion mediated by glycolipids.  
*Nature* 276, 624-626.

HULAN, H. W., F. G. PROUDFOOT & K. B. McRAE (1980):

Effect of vitamins on the incidence of mortality and acute death syndrome ("flip-over") in broiler chicks.  
*Poultry Science* 59, 927-931.

HUSCHKA, C. (1998):

Untersuchung zur Wirkung von Biotin auf humane Keratinozyten und zur Modulation der Biotinpenetration in humane Haut.  
Halle-Wittenberg, Martin-Luther-Universität, Mathematisch-Naturwissenschaftlich-Technische Fakultät, Dissertation.

HYMES, J., K. FLEISCHHAUER & B. WOLF (1995a):

Biotinylation of biotinidase following incubation with biocytin.  
*Clinica Chimica Acta* 233, 39-45.

HYMES, J., K. FLEISCHHAUER & B. WOLF (1995b):

Biotinylation of histones by human serum biotinidase: Assessment of biotinyl-transferase activity in sera from normal individuals and children with biotinidase deficiency.  
*Biochemical and Molecular Medicine* 56, 76-83.

INFORMATIONEN ZUR PUTENMAST (2002/2003):

Moorgut Kartzfehn

JENSEN, L. S. (1985):

Effect of cage floor and diet on the incidence of pododermatitis and on health in broiler breeder males.  
*Poultry Science* 64 (Suppl. 1), 122 (abstract).

- JENSEN, L. S. & R. MARTINSON (1969):  
Requirement of turkey poult for biotin and effect of deficiency of incidence of leg  
weakness in developing turkeys.  
*Poultry Science* 48, 222-230.
- JENSEN, L. S., R. MARTINSON & G. SCHUMAIER (1970):  
A foot pad dermatitis in turkey poult associated with soybean meal.  
*Poultry Science* 49, 76-82.
- JODAS, S. & H. M. HAFEZ (2000):  
Litter management and related diseases in turkeys.  
*World Poultry* 16(12), 30-34.
- JOHNSON, C. W. (1967):  
Field evaluation of d-biotin supplementation for biotin deficient turkey poult and older  
turkeys.  
*Poultry Science* 46, 1276.
- JOHNSON, A. R., R. L. HOOD & J. L. EMERY (1980):  
Biotin and the sudden infant death syndrome.  
*Nature* 285, 159-160.
- JULIAN, R. J. (1998):  
Rapid growth problems: Ascites and skeletal deformities in broilers.  
*Poultry Science* 77(12), 1773-1780.
- JULIAN, R. J. & M. K. BHATNAGAR (1985):  
Cartilage lesions associated with shaky-leg lameness in turkeys.  
*Avian Diseases* 29(1), 218-232.
- JUNQUEIRA, L. C. & J. CARNEIRO (1986):  
Haut, Integumentum commune.  
Histologie. 2. Aufl., Verlag Springer, Berlin, Heidelberg, New York, London, Paris,  
Tokyo, 95-245, 370-394.
- KARNOVSKY, M. J. (1965):  
A formaldehyde-glutaraldehyde fixative of high osmolality for use in electron  
microscopy.  
*Journal of Cell Biology* 32, 231-136.
- KELLY, D. (1982):  
Tracing the turkey trail.  
*Poultry International* (Dec.), 68-72.
- KIM, K.-H. (1997):  
Regulation of mammalian acetyl-coenzyme A carboxylase.  
*Annual Review of Nutrition* 17, 77-99.
- KNOSPE, C. (1989):  
Zur Wasseranpassung der Walhaut.  
*Anatomia, Histologia, Embryologia* 18, 193-198.
- KÖGL, F. & B. TÖNNIS (1936):  
Über das Bios-Problem. Darstellung von kristallinem Biotin aus Eigelb.  
*Hoppe-Seyler's Zeitschrift für Physiologische Chemie* 242, 43-73.

- KÖNIG, H. E., S. REESE & C. MÜLLING (2001):  
 Allgemeine Körperdecke (Integumentum commune).  
 In: H. E. KÖNIG & H. G. LIEBICH (Hrsg.): Anatomie und Propädeutik des Geflügels.  
 Verlag Schattauer, Stuttgart, New York, 221-232.
- KORFMANN, M. A. (2003):  
 Zur Skelettentwicklung und Wachstumsdynamik der Beckengliedmaße bei  
 Mastputern-(makroskopische, mikroskopische, radiologische, osteodensitometrische  
 und mineralstoffanalytische Verlaufuntersuchungen).  
 Berlin, Fachbereich Veterinärmedizin der Freien Universität, Institut für Veterinär-  
 Pathologie, Dissertation.
- KORPELA, J. K., M. S. KULOMAA, H. A. ELO & P. J. TUOHIMAA (1981):  
 Biotin-binding proteins in eggs of oviparous vertebrates.  
*Experientia* 37, 1065-1066.
- KRAUTWALD-JUNGHANNS, M. E. (2003):  
 Putenproduktion in Deutschland: Ansätze für eine tierschutzgerechte Haltung.  
 Deutsches Tierärzteblatt (Jan.), 4-8.
- KRUGER, K. (2001):  
 Are production practices keeping up with genetic improvement?  
 In: 25. Annual North Carolina Turkey Industry Days Conference, Raleigh, North  
 Carolina (Oct. 3-4).
- KÜNZEL, E. (1990):  
 Haut (Integumentum commune).  
 In: W. MOSIMANN & T. KOHLER: Zytologie, Histologie und mikroskopische  
 Anatomie der Haussäugetiere. 1. Aufl. Verlag Parey, Berlin, Hamburg, 259-287.
- KÜSTER, W., B. MELNIK, H. TRAUPE & H. HAMM (2003):  
 Lipid composition of outer stratum corneum in hereditary palmoplantar keratodermas.  
*Dermatology* 206, 131-135.
- LAMPEN, J. O., G. P. BAHLER & W. H. PETERSON (1942):  
 The occurrence of free and bound biotin.  
*The Journal of Nutrition* 23, 11-21.
- LANDMANN, L. (1980):  
 Lamellar granules in mammalian, avian and reptilian epidermis.  
*Journal of Ultrastructure Research* 72, 245-263.
- LANDMANN, L. (1986):  
 Epidermal permeability barrier: Transformation of lamellar granule-disks into  
 intercellular sheets by a membrane-fusion process, a freeze-fracture study.  
*The Journal of Investigative Dermatology* 87(2), 202-203.
- LANDMANN, L. (1988):  
 The epidermal permeability barrier.  
*Anatomy and Embryology* 178, 1-13.
- LARSSON, B., N. OBEL & B. ÅBERG (1956):  
 On the biochemistry of keratinization in the matrix of the horse's hoof in normal  
 conditions and in laminitis.  
*Nordisk Veterinaermedicin* 8, 761-776.

- LAVKER, R. M. (1975):  
Lipid synthesis in chick epidermis.  
The Journal of Investigative Dermatology 65(1), 93-101.
- LAVKER, R. M. (1976):  
Membrane-coating granules: The fate of the discharged lamellae.  
Journal of Ultrastructure Research 55, 79-86.
- LEASE, J. G. & H. T. PARSON (1934):  
The relationship of dermatitis in chicks to lack of vitamins B2 and to dietary egg-white.  
Journal of Biochemistry 28, 2109-2115.
- LEESON, S., B. S. REINHART & J. D. SUMMERS (1979a):  
Response of white leghorn and rhode island red breeder hens to dietary deficiencies  
of synthetic vitamins. 2. Embryo mortality and abnormalities.  
Canadian Journal of Animal Science 59, 569-575.
- LEESON, S., B. S. REINHART & J. D. SUMMERS (1979b):  
Response of white leghorn and rhode island red breeder hens to dietary deficiencies  
of synthetic vitamins. 1. Egg production, hatchability and chick growth.  
Canadian Journal of Animal Science 59, 561-567.
- LIEBICH, H. G. (1990):  
Zytologie, die Lehre von der Zelle; Haut und Hautorgane.  
Funktionelle Histologie. Farbatlas und Kurzlehrbuch der mikroskopischen Anatomie  
der Haussäugetiere. Verlag Schattauer, Stuttgart, New York, 3-27, 274-287.
- LIMAT, A., T. SUORMALA, T. HUNZIKER, E. R. WAELTI, L. R. BRAATHEN &  
R. BAUMGARTEN (1996):  
Proliferation and differentiation of cultured human follicular keratinocytes are not  
influenced by biotin.  
Archives of Dermatological Research 288, 31-38.
- LIU, H. K., K. E. NESTOR, D. W. LONG & W. L. BACON (2001):  
Frequency of luteinizing hormone surges and egg production rate in turkey hens.  
Biology of Reproduction 64, 1769-1775.
- LÖHNERT, A., S. WURM & S. UEBERSCHÄR (1996):  
Ergebnisse der pathologisch-anatomischen Befunderhebung an Gliedmaßen und  
Wirbelsäule.  
Deutsche Tierärztliche Wochenschrift 103, 92-97.
- LOGANI, M. K., D. B. NHARI, P. D. FORBES & R. E. DAVIES (1977):  
Short communication, diester waxes from skin lipids of the feet of biotin depleted and  
biotin supplemented turkey pouls.  
Lipids 12(7), 626-628.
- LUCAS, A. H. & P. R. STETTENHEIM (1972):  
Avian Anatomy, Vol. 1: Topographic anatomy.  
Avian Anatomy, Vol. 2: Integument.  
Agriculture Handbook 362, US Government, Printing Office, Washington DC,  
Vol. I: 1-22; Vol. II: 1-2, 16-17, 489-635.

- MADERSON, P. F. A. (1965):  
The embryonic development of the squamate integument.  
*Acta Zoologica* 46, 275-295.
- MADISON, K. C. (2003):  
Barrier function of the skin: „La raison d' être“ of the epidermis.  
*The Journal of Investigative Dermatology* 121, 231-241.
- MADISON, K. C., D. C. SWARTZENDRUBER, P. W. WERTZ & D. T. DOWNING (1987):  
Presence of intact intercellular lipid lamellae in the upper layers of the stratum corneum.  
*The Journal of Investigative Dermatology* 88(6), 714-718.
- MARTLAND, M. F. (1984):  
Wet litter as a cause of plantar pododermatitis, leading to foot ulceration and lameness in fattening turkeys.  
*Avian Pathology* 13, 241-252.
- MARTLAND, M. F. (1985):  
Ulcerative dermatitis in broiler chickens: The effect of wet litter.  
*Avian Pathology* 14, 353-346.
- MARTRENCHE, A., E. BOILLETOT, D. HUONNIC & F. POL (2002):  
Risk factors for foot-pad dermatitis in chicken and turkey broilers in France.  
*Preventive Veterinary Medicine* 52(3-4), 213-226.
- MATOLTSY, A. G. (1969):  
Keratinization of the avian epidermis: An ultrastructural study of the newborn chick skin.  
*Journal of Ultrastructure Research* 29(5), 438-458.
- MATOLTSY, A. G. (1976):  
Keratinization.  
*The Journal of Investigative Dermatology* 67, 20-25.
- MATOLTSY, A. G. & M. N. MATOLTSY (1966):  
The membrane protein of horny cells.  
*The Journal of Investigative Dermatology* 46, 127-129.
- MATOLTSY, A. G. & P. F. PARAKKAL (1965):  
Membrane-coating granules of keratinizing epithelia.  
*Journal of Cell Biology* 24, 297-307.
- MATOLTSY, A. G. & P. F. PARAKKAL (1967):  
Keratinization.  
In: A. ZELICKSON (ed.): *Ultrastructure of Normal and Abnormal Skin*. Lea & Febiger Philadelphia, 76-104.
- McEWAN JENKINSON, D. & P. S. BLACKBURN (1968):  
The distribution of nerves, monoamine oxidase and cholinesterase in the skin of poultry.  
*Research in Veterinary Science* 9, 429-434.

- McNAUGHTON, J. L., J. W. DEATON, F. N. REECE & R. I. HAYNES (1978):  
Effect of age of parents and hatching egg weight on broiler chick mortality.  
*Poultry Science* 57, 38-44.
- MEGURO, S., Y. ARAI, Y. MASUKAWA, K. UIE & I. TOKIMITSU (2000):  
Relationship between covalently bound ceramides and transepidermal water loss  
(TEWL).  
*Archives of Dermatological Research* 292, 463-468.
- MEHNER, A. & W. HARTFIELD (1983):  
Haut und Hautderivate.  
Handbuch der Geflügelphysiologie, Teil I., Verlag Karger, Basel, München, Paris,  
London, New York, Tokyo, Sydney, 55-100.
- MENON, G. K., S. K. AGGARWAL & A. M. LUCAS (1981):  
Evidence for the holocrine nature of lipoid secretion by avian epidermal cells:  
A histochemical and fine structural study of rictus and the uropygial gland.  
*Journal of Morphology* 167, 185-199.
- MENON, G. K., B. E. BROWN & P. M. ELIAS (1986a):  
Avian epidermal differentiation: Role of lipids in permeability barrier formation.  
*Tissue & Cell* 18(1), 71-82.
- MENON, G. K., S. GRAYSON, B. E. BROWN & P. M. ELIAS (1986b):  
Lipokeratinocytes of the epidermis of a cetacean (*Phocena phocena*).  
*Cell & Tissue Research* 26, 385-394.
- MENON, G. K., P. F. A. MADERSON, R. C. DREWES, L. F. BAPTISTA, L. F. PRICE &  
P. M. ELIAS (1996):  
Ultrastructural organization of avian stratum corneum lipids as the basis for facultative  
cutaneous waterproofing.  
*Journal of Morphology* 227(1), 1-13.
- MENTON, D. N. (1970):  
The effect of essential fatty acid deficiency on fine structure of mouse skin.  
*Journal of Morphology* 132, 181-206.
- MESLAR, H. W.; S. A. CAMPER & H. B. WHITE, III (1978):  
Biotin-binding protein from egg yolk: A protein distinct from egg white avidin.  
*The Journal of Biological Chemistry* 253, 6979-6982.
- MEYER, W & M. RÖHRS (1986):  
Von der Reptilienschuppe zu Feder und Haar – zur Evolution der  
Hautanhängsorgane.  
*Deutsche Tierärztliche Wochenschrift* 93, 245-251.
- MISIR, R. & R. BLAIR (1988):  
Biotin bioavailability of protein supplements and cereal grain for starting pouls.  
*Poultry Science* 67(9), 1274-1280.
- MOCK, D. M. (1996):  
Biotin.  
In: E. E. ZIEGLER & L. J. FILER (eds.): Present knowledge in nutrition. 7. ed., ILSI  
Nutrition Foundation. (Review), Washington DC, 220-236.

- MOCK, D. M. (1999):  
Biotin.  
In: M. E. SHILS, J. A. OLSON, M. SHIKE & A. C. ROSS (eds.): Modern nutrition in health and disease. 9. ed., Williams & Wilkins, Baltimore, 459-466.
- MOCK, D. M. & M. I. MALIK (1992):  
Distribution of biotin in human plasma: Most of the biotin is not bound to protein.  
*The American Journal of Clinical Nutrition* 56, 427-432.
- MOSKOWITZ, M. & D. K. S. CHENG (1985):  
Stimulation of growth factor production in cultured cells by biotin.  
In: K. DAKSHINAMURTI & H. N. BHAGAVAN (eds.): Biotin. Vol. 447, New York Academy of Sciences, 212-221.
- MÜLLING, C. H. (1993):  
Struktur, Verhornung und Hornqualität in Ballen, Sohle und weißer Linie der Rinderklaue und ihre Bedeutung für Klauenerkrankungen.  
Berlin, Fachbereich Veterinärmedizin der Freien Universität, Institut für Veterinär-Anatomie, Dissertation.
- MÜLLING, C. H. & K.-D. BUDRAS (1998):  
Der Interzellularkitt (Membrane Coating Material, MCM) in der Epidermis der Rinderklaue.  
*Wiener Tierärztliche Monatsschrift* 85, 216-223.
- NAGARAJ, K. (1996):  
Biotin in poultry nutrition.  
*Poultry Advisor* 29, 47-49.
- NAIRN, M. E. & A. R. A. WATSON (1972):  
Leg weakness of poultry—a clinical and pathological characterisation.  
*Australian Veterinary Journal* 48, 645-656.
- NEUMANN, S. L., J. I. ORBAN, T. L. LIN, M. A. LATOUR & P. Y. HESTER (1999):  
The effect of vitamin C on the reproductive performance of male turkey breeders.  
*Poultry Science* 78, (Suppl. 1), 20 (abstract).
- ODLAND, G. F. & T. H. REED (1967):  
Epidermis.  
In: A. S. ZELICKSON (ed.): Ultrastructure of Normal and Abnormal Skin.  
Lea & Febiger, Philadelphia, 54-75.
- ORFANOS, C. (1969):  
Das Keratin der Fingerbeere.  
*Klinische Wochenschrift* 47, 439-441.
- PARAKKAL, P. F. & N. J. ALEXANDER (1972):  
Keratinization, a survey of vertebrate epithelia.  
Academic Press, London; New York, 59.
- PATRICK, H., R. V. BOUCHER, R. ADAMS DUTCHER & H. C. KNADEL (1942):  
The nutritional significance of biotin in chick and poult nutrition.  
*Poultry Science* 21, 476.

PAYER, A (2001):

Puten, Tauben, Wachteln, Strauße.  
Entwicklungsländerstudie Teil I, Grundgegebenheiten, Kapitel 8: Tierische Produkte,  
7. Geflügel.  
[www.payer.de/entwicklung/entw0874.htm](http://www.payer.de/entwicklung/entw0874.htm) (Stand: 08.2002).

PETRELLI, F., S. CODERONI, P. MORETTI & M. PAPARELLI (1978):

Effect of biotin on phosphorylation, acetylation, methylation of rat liver histones.  
Molecular Biology Reports 4, 87-92.

PETRELLI, F., G. MARSILI & P. MORETTI (1976):

RNA, DNA, histones and interactions between histone proteins and DNA in the liver  
of biotin deficient rats.  
Biochemistry and Experimental Biology 12, 461-465.

PLATT, S. L. (2004):

Die reticulate scales an den Fußballen schwerer Mastputen und deren Beeinflussung  
durch unterschiedliche Biotindosierungen unter Feldbedingungen.  
Berlin, Fachbereich Veterinärmedizin der Freien Universität, Institut für Veterinär-  
Anatomie, Dissertation.

PRASAD, P. D., H. WANG, R. KEKUDA, T. FUJITA, Y.-J. FEI, L. D. DEVOE, F. H. LEIBACH  
& V. GANAPATHY (1998):

Cloning and functional expression of a cDNA encoding a mammalian sodium-  
dependent vitamin transporter mediating the uptake of pantothenate, biotin, and  
lipoate.

The Journal of Biological Chemistry 273(13), 7501-7506.

RICHARDSON, C. E. & H. S. WILGUS (1967):

Biotin-a limiting factor in turkey rations.  
Feedstuffs (Aug.) 12, 52-54.

RIDDELL, C. (1981):

Skeletal deformities in poultry.  
Advances in Veterinary Science and Comparative Medicine 25, 277-310.

ROBBLEE, A. R. & D. R. CLANDINI (1970):

The role of biotin in the nutrition of turkey poultts.  
Poultry Science 49, 976-981.

ROBEL, E. J (1985):

Effect of injecting turkey eggs with biotin on hatchability.  
Poultry Science 64 (Suppl. 1), 171 (abstract).

ROBEL, E. J. & V. L. CHRISTENSEN (1987):

Increasing hatchability of turkey eggs with biotin injections.  
Poultry Science 66, 1429-1430.

ROBINSON, F. E., R. A. RENEMA, H. H. OOSTERHOFF, M. J. ZUIDHOF &  
J. L. WILSON (2001):

Carcasse traits, ovarian morphology and egg laying characteristics in early versus  
late maturing strains of commercial egg-type hens.  
Poultry Science 80, 37-46.

- ROCHE VITAMINS EUROPE LTD, Basel, Switzerland (2000):  
Biotin in poultry nutrition; the proven vitamin for the future.  
[www.roche.com/vitamins](http://www.roche.com/vitamins) (Stand: 12.2000).
- RODRIGUEZ-MELÉNDEZ, R. R. (2000):  
Importancia del metabolismo de la biotina.  
La Revista de Investigación Clinica 52, 194-199.
- ROLAND, D. A. & H. M. EDWARD (1971):  
Effect of essential fatty acid deficiency and type of dietary fat supplementation on  
biotin-deficient chicks.  
The Journal of Nutrition 101, 811-818.
- ROMEIS, B. (1989):  
Mikroskopische Technik. 17. Aufl., Verlag Urban und Schwarzenberg, München,  
Wien & Baltimore, 215, 247-249, 357, 381-394, 500.
- ROSENBAUER, K. A. & B. H. KEGEL (1978):  
Rasterelektronenmikroskopische Technik: Präparationsverfahren in Medizin und  
Biologie.  
Verlag Thieme, Stuttgart, 59-63.
- ROTH, H. J. (1987):  
Vitamin  
Deutsche Apotheker-Zeitung 127 (42 Suppl. 6), 21.
- SAID, H. M. (1999a):  
Cellular uptake of biotin: Mechanisms and regulation.  
The Journal of Nutrition 129 (Suppl.), 490S-493S.
- SAID, H. M. (1999b):  
Biotin bioavailability and estimated average requirement: Why bother?  
The American Journal of Clinical Nutrition 69, 352-353.
- SAID, H. M., R. REDHA & W. NYLANDER (1988):  
Biotin transport in the human intestine: Site of maximum transport and effect of pH.  
Gastroenterology 95, 1312-1317.
- SAID, H. M., L. P. THUY, L. SWEETMAN & B. SCHATZMAN (1993):  
Transport of the biotin dietary derivative biocytin (N-biotinyl-L-lysine) in rat small  
intestine.  
Gastroenterology 104, 75-80.
- SAMBRAUS, H. H. (1986):  
Puten, Truthühner.  
Atlas der Nutztierrassen, 180 Rassen in Wort und Bild. Verlag Ulmer, Stuttgart, 245.
- SAUVEUR, B. (1984):  
Dietary factors as causes of leg deformities in poultry – a review.  
World's Poultry Science Journal 63, 620-627.
- SAWYER, R. H., U. K. ABBOTT & G. N. FRY (1974):  
Avian scale development III: Ultrastructure of the keratinizing cells of the outer and  
inner epidermal surface of the scale ridge.  
The Journal of Experimental Zoology 190, 57-70.

- SAWYER, R. H. & T. K. BORG, (1979):  
Avian scale development VI: Ultrastructure of the keratinizing cells of reticulate scales.  
*Journal of Morphology* 161, 111-122.
- SAWYER, R. H. & K. F. CRAIG (1977):  
Avian scale development: Absence of an “epidermal placode” in reticulate scale morphogenesis.  
*Journal of Morphology* 154, 83-94.
- SAWYER, R. H., L. W. KNAPP & W. M. O' GUIN (1982):  
The skin of birds: Epidermis, dermis and appendages.  
In: J. BEREITER-HAHN, A. G. MATOLTSY & K. S. RICHARDS: Biology of the Integument. 2. Vertebrates. Verlag Springer, Berlin, Heidelberg, New York, Tokyo, 194-238.
- SCHMUTH, M.; G. YOSIPOVITCH, M. L. WILLIAMS, F. WEBER, H. HINTNER, S. ORTIZ-URDA, K. RAPPERSBERGER, D. CRUMRINE, K. R. FEINGOLD & P M ELIAS (2001):  
Pathogenesis of the permeability barrier abnormality in epidermolytic hyperkeratosis.  
*The Journal of Investigative Dermatology* 117, 837-847.
- SCHNEIDER, I. M. & W. WOHLRAB (1997):  
Fettsäuren und Epidermis.  
*Hautarzt* 48, 303-310.
- SCHOLTYSEK, S. & P. DOLL (1978):  
Puten. Abstammung und Herkunft, Rassemmerkmale.  
Nutz- und Ziergeflügel, Verlag Ulmer, Stuttgart, 368-369.
- SCHWEITZER, H. M. (1999):  
Claws, beaks, scales and feathers. The evolution implications of keratin preservation in the fossil record.  
In: The Dinofest Symposium, Academy of Natural Science Philadelphia, Pennsylvania  
[www.cnmh.org/dinoarch/1999Mar/msg00335.html](http://www.cnmh.org/dinoarch/1999Mar/msg00335.html), (Stand 11.2002).
- SCOTT, M. L. (1981):  
Importance of biotin for chickens and turkeys.  
*Feedstuffs* 53(8), 59-67.
- SELBY, C. C. (1957):  
An electron microscopic study of thin sections of human skin. II: Superficial cell layers of footpad epidermis.  
*The Journal of Investigative Dermatology* 29, 131-149.
- SHAH, R. V., G. K. MENON, J. H. DESAI & M. B. JANI (1977):  
Featherless loss of capital tracts of painted storks related to growth and maturity.  
I: Histophysiological changes and lipoid secretion in the integument.  
*Journal of Animal Morphology and Physiology* 24, 99-107.
- SHAMES, R. B., L. W. KNAPP, W. E. CARVER, L. D. WASHINGTON & R. H. SAWYER (1989):  
Keratinization of the outer surface of the avian scutate scales: Interrelationship of alpha and beta keratin filaments in a cornifying tissue.  
*Cell & Tissue Research* 257, 85-92.

SHRIVER, B. J. & J. B. ALLRED (1990):  
Storage forms of biotin in rat liver.  
The FASEB Journal 4, A501 (abstract).

SHRIVER, B. J., C. ROMAN-SHRIVER & J. B. ALLRED (1993):  
Depletion and repletion of biotinyl enzymes in liver of biotin-deficient rats: Evidence of  
a biotin storage system.  
Journal of Nutrition 123, 1140-1149.

SIKORSKI, J. (1975):  
Structural studies of mammalian keratin.  
In: E. D. T. ATKINS & A. KELLER (eds.): Structure of fibrous biopolymers.  
Butterworths, London, 271-287.

SPEARMAN, R.I. C. (1966):  
The keratinization of epidermal scales, feathers and hair.  
Biological Reviews of the Cambridge Philosophical Society 41(1), 59-96.

SPEARMAN, R. I. C. (1971):  
Integumentary system.  
In: D. J. BELL, & B. M. FREEMAN (eds.): Physiology and biochemistry of the  
domestic fowl. Vol. 2., Academic Press, London, New York, 603-620.

SPEARMAN, R.I. C. (1982):  
Structure and function of subcutaneous tissue.  
In: A. JARRETT (ed.): The physiology and pathophysiology of the skin. Vol.7.,  
Academic Press, London, New York.

SPEARMAN, R. I. C. & J. A. HARDY (1985):  
Integument.  
In: A. S. KING & J. McLELLAND (eds.): Form and function in birds. Vol. 3. Academic  
Press, London, Orlando, San Diego, New York, Toronto, Montreal, Sydney, Tokyo,  
1-56.

SPENCE J.T. & A. P. KOUDELKA (1984):  
Effects of biotin upon the intracellular level of cGMP and the activity of glucokinase in  
cultured rat hepatocytes.  
Journal of Biological Chemistry 259(10), 6393-6396.

STARCK, D. (1975):  
Primitiventwicklung der Meroblastier.  
Der Ontogenesetyp und seine evolutive Beurteilung.  
In: D. STARCK (Hrsg.): Embryologie. Kapitel A. Verlag Thieme, Stuttgart, 167-187,  
345-346.

STARCK, D. (1982):  
Integument und Anhangsorgane.  
Vergleichende Anatomie der Wirbeltiere auf evolutionsbiologischer Grundlage.  
Band 3, Verlag Springer, Berlin, Heidelberg, New York, 131-248.

STETTENHEIM, P. R. (1972):  
The integument of birds.  
In: D. S. FARNER & J. R. KING (eds.): Avian biology. Vol. 2, Academic Press, New  
York, London, 1-36.

- STOCK, R. H. (1981):  
Chondrodystrophy in broiler chicks fed manganese, biotin and choline chloride deficient diets.  
Ohio State University Thesis.
- SWARTZENDRUBER, D. C., P. W. WERTZ, K. C. MADISON & D. T. DOWNING (1987):  
Evidence that the corneocyte has a chemically bound lipid envelope.  
*The Journal of Investigative Dermatology* 88(6), 709-713.
- SWICK, H. M. & C. L. KIEN (1983):  
Biotin deficiency with neurologic and cutaneous manifestations but without organic aciduria.  
*The Journal of Pediatrics* 103, 265-267.
- TRANTER, H. S. & R. G. BOARD (1982):  
The antimicrobial defense of avian eggs: Biological perspective and chemical basis.  
*Journal of Applied Biochemistry* 4, 295-338.
- VAHL, H. (1985):  
Leg disorders in broiler chickens.  
Poultry-Misset, 12-15.
- VENABLE, J. H. & R. COGGESHALL (1965):  
A simplified lead citrate stain for use in electron microscopy.  
*Journal of Cell Biology* 25, 407-408.
- VESLEY D. L., H. C. WORMSER & H. N. ABRAMSON (1984):  
Biotin analogues activate guanylate cyclase.  
*Molecular and Cellular Biochemistry* 60, 109-114.
- VIEIRA, A. V., H. B. WHITE III & P. M. VIEIRA (1996):  
An oocytic membrane receptor for biotin-binding protein.  
*FEBS Letters* 11, 382(1-2), 183-185.
- VIELHABER, G., S. PFEIFFER, L. BRADE, B. LINDNER, T. GOLDMANN, E. VOLLMER, U. HINTZE, K. P. WITTERN & R. WEPPF (2001):  
Localization of ceramide and glucosylceramide in human epidermis by immunogold electron microscopy.  
*The Journal of Investigative Dermatology* 117, 1126-1136.
- VISSCHER, M. O., R. CHATTERJEE, K. A. MUNSON, W. L. PICKENS & S. B. HOATH (2000):  
Changes in diapered and nondiapered infant skin over the first month of life.  
*Pediatric Dermatology* 17, 45-51.
- VOET, D. & J. G. VOET (1994)  
Biochemie.  
1. Aufl., Verlag Chemie, Weinheim, New York, Basel, Cambridge, Tokyo.
- VOLLMERHAUS, B. (1992):  
Einführung.  
In: R. NICKELE, A. SCHUMMER & E. SEIFERLE (Hrsg.): Lehrbuch der Anatomie der Haustiere. Band V: Anatomie der Vögel, 2. Aufl., Verlag Paul Parey, Berlin, Hamburg, 1-12.

- VOLLMERHAUS, B. & F. SINOWATZ (1992):  
Haut und Hautgebilde.  
In: R. NICKEI, A. SCHUMMER & E. SEIFERLE (Hrsg.): Lehrbuch der Anatomie der Haustiere. Band V: Anatomie der Vögel, 2. Aufl., Verlag Paul Parey, Berlin, Hamburg, 16-47.
- WÄSE, K. (1999):  
Studie über die gesunde Haut von Masthühnern und ihre Veränderungen bei einem experimentell erzeugten Biotinmangel.  
Berlin, Fachbereich Veterinärmedizin der Freien Universität, Institut für Veterinär-Anatomie, Dissertation.
- WARD, H. & H. P. LUNDGREN (1954):  
The formation, composition and properties of the keratin.  
*Advances in Protein Chemistry* 9, 243-297.
- WEBSTER, M. D., G. S. CAMPBELL & J. R. KING (1985):  
Cutaneous resistance to water-vapor diffusion in pigeons and the role of the plumage.  
*Physiological Zoology* 58, 58-70.
- WEINSTOCK, M & G. F. WILGRAM (1970):  
Fine-structural observations on the formation and enzymatic activity of keratosomes in mouse tongue filiform papillae.  
*Journal of Ultrastructure Research* 30, 262-274.
- WEISS, E. & J. P. TEIFKE (1999):  
Haut.  
In: E. DAHME & E. WEISS (Hrsg.): Grundriß der speziellen pathologischen Anatomie der Haustiere. 5. Aufl., Verlag Enke, Stuttgart, 485-557.
- WERTZ, P. W. (1997):  
Integral lipids of hair and stratum corneum.  
*Experientia Supplement (EXS)* 78, 227-237.
- WERTZ, P. W. (2000):  
Lipids and barrier function of the skin.  
*Acta Dermato-Venereologica* 208 (Suppl.), 7-11.
- WERTZ, P. W., W. A. ABRAHAM, L. LANDMANN & D. T. DOWNING (1986):  
Preparation of liposomes from stratum corneum lipids.  
*The Journal of Investigative Dermatology* 87, 582-584.
- WERTZ, P. W., D. C. SWARTZENDRUBER, D. J. KITKO, K. C. MADISON & D. T. DOWNING (1989):  
The role of the corneocyte lipid envelopes in cohesion of the stratum corneum.  
*The Journal of Investigative Dermatology* 93, 169-172.
- WHITE, H. B., III (1985):  
Biotin-binding proteins and biotin transport to oocytes.  
*Proceedings of the New York Academy of Science* 447, 202- 211.

WHITE, H. B. III, B. A. DENNISON, M. A. DELLA FERRA, C. J. WHITNEY, J. C. McGUIRE, H. W. MESLAR & P. H. SAMMELWITZ (1976):

Biotin-binding protein from chicken egg yolk: Assay and relationship to egg white avidin.

Journal of Biochemistry 157(2), 395-400.

WHITE, H. B., III & A. R. HUGHES (1981):

Biotin-binding proteins in chicken eggs and the biotin requirements of chicken embryos.

Poultry Science 60, 1454-1457.

WHITE, H. B. III & C. C. WHITEHEAD (1987):

Role of avidin and other biotin-binding proteins in the deposition and distribution of biotin in chicken eggs: Discovery of a new biotin-binding protein.

Journal of Biochemistry 241(3), 677-684.

WHITE, H. B. III, C. C. WHITEHEAD & J. ARMSTRONG (1987):

Relationship of biotin deposition in turkey eggs to dietary biotin and biotin-binding proteins.

Poultry Science 66(7), 1236-1241.

WHITEHEAD, C. C. (1980)

Performance of laying hens fed on practical diets containing different levels of supplemental biotin during rearing and laying stages

British Journal of Nutrition 44, 151-159.

WHITEHEAD, C. C. (1986):

Ermittlung des Biotinstatus.

In: C. C. WHITEHEAD (1991): Biotin in der Tierernährung.

F. Hoffmann-La Roche & Co. Ltd., Basel, Switzerland, 38-40.

WHITEHEAD, C. C. (1988):

Biotin in animal nutrition.

F. Hoffmann-La Roche & Co. Ltd., Basel, Switzerland.

WHITEHEAD, C. C. (1991):

Biotin in der Tierernährung.

F. Hoffmann-La Roche & Co. Ltd., Basel, Switzerland.

WHITEHEAD, C. C., R. A. PEARSON & K. M. HERRON (1985):

Biotin requirements of broiler breeders fed diets of different protein content and effect of insufficient biotin on the viability of progeny.

British Poultry Science 26, 73-82.

WIESNER, E. & R. RIBBECK (1991):

Sauropsiden.

Wörterbuch der Veterinärmedizin. 3.Aufl. Verlag Gustav Fischer, Jena, Stuttgart, 198.

WILDIERS, E. (1901):

Nouvelle substance indispensable au développement de la levure.

La Cellule 18, 313-316.

- WRENCH, R., J. A. HARDY & R. I. C. SPEARMAN (1980):  
Sebokeratocytes of avian epidermis-with mammalian comparison.  
In: R. I. C. SPEARMAN & P. A. RILEY (eds.): *The skin of vertebrates*.  
Linnean Society of London by Academic Press, London, New York, 47-56.
- ZEMPLENI, J. & D. M. MOCK (2000):  
Marginal biotin deficiency is teratogenic.  
Proceedings of the Society for Experimental Biology and Medicine 223, 14-21:
- ZEMPLENI, J. & D. M. MOCK (2001):  
Biotin homeostasis during the cell cycle.  
Nutrition Research Reviews 14, 45-63.

## Fußnoten

- <sup>1</sup>[www.bbs-saalkreis.de/merbitz/pute/tiere/domestikation\\_pute.htm](http://www.bbs-saalkreis.de/merbitz/pute/tiere/domestikation_pute.htm) (Stand: 03.2003)
- <sup>2</sup>[www.bernard-mattnews.de/info-pute\\_truthahn.html](http://www.bernard-mattnews.de/info-pute_truthahn.html) (Stand: 03.2003)
- <sup>3</sup>[www.vier-pfoten.de/kampagne/01-pute2.html](http://www.vier-pfoten.de/kampagne/01-pute2.html) (Stand: 03.2003)
- <sup>4</sup>[www.deutsche-puten.de](http://www.deutsche-puten.de) (Stand: 08.2001)
- <sup>5</sup>[www.deutsche-puten.de](http://www.deutsche-puten.de) (Stand: 08.2001)
- <sup>6</sup>[www.vfcdnicholas.com/anh/nutrient\\_deficiencies. doc](http://www.vfcdnicholas.com/anh/nutrient_deficiencies. doc) (Stand: 07.2003)
- <sup>7</sup>[www.yavivo.de](http://www.yavivo.de) (Stand: 11.2001)
- <sup>8</sup>[www.vfcdnicholas.com/anh/nutrient\\_deficiencies. doc](http://www.vfcdnicholas.com/anh/nutrient_deficiencies. doc) (Stand: 07.2003)
- <sup>9</sup>[www.lysine.com/new/Technical%20Reports/Poultry/PRR10.pdf](http://www.lysine.com/new/Technical%20Reports/Poultry/PRR10.pdf) (Stand: 11.2004)
- <sup>10</sup>[www.poultrysolutions.com/knowledg/articles/breed/artical1.htm](http://www.poultrysolutions.com/knowledg/articles/breed/artical1.htm) (Stand: 05.2003)  
Role of micronutrients in the feed ration of the poultry.
- <sup>11</sup>[www.poultrysolutions.com/knowledg/articles/breed/artical1.htm](http://www.poultrysolutions.com/knowledg/articles/breed/artical1.htm) (Stand: 05.2003)  
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