

# Chapter 250

## Cosmetics and Skin Care in Dermatology

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### REFERENCES

1. Tsao A: The changing face of skincare. *Business Week* online, Nov. 30, 2004, [http://www.businessweek.com/bwdaily/dnflash/nov2004/nf20041130\\_0962\\_db035.htm](http://www.businessweek.com/bwdaily/dnflash/nov2004/nf20041130_0962_db035.htm), accessed Oct 3, 2010)
2. <http://www.freedoniagroup.com/Cosmeceuticals.html>, accessed Dec 16, 2009
3. [http://www.researchwikis.com/Cosmeceuticals/Marketing\\_Research](http://www.researchwikis.com/Cosmeceuticals/Marketing_Research), accessed Dec 16, 2009
4. Baumann L: *The Skin Type Solution*. New York, Bantam Dell, 2006
5. Chernosky ME: Clinical aspects of dry skin. *J Soc Cosmet Chem* **65**:376, 1976
6. Rawlings A et al: Skin Dryness—What is it? *J Invest Dermatol* **100**:510, 1993
7. Wildnauer RH, Bothwell JW, Douglass AB: Stratum corneum biomechanical properties. I. Influence of relative humidity on normal and extracted human stratum corneum. *J Invest Dermatol* **56**(1):72-78, 1971
8. Orth D, Appa Y: Glycerine: a natural ingredient for moisturizing skin. In: *Dry Skin and Moisturizers*, edited by M Loden, H Maibach. Boca Raton, CRC Press, 2000, p. 214
9. Ekholm IE, Brattsand M, Egelrud T: Stratum corneum tryptic enzyme in normal epidermis: a missing link in the desquamation process? *J Invest Dermatol* **114**(1):56-63, 2000
10. Elias PM: The epidermal permeability barrier: from the early days at Harvard to emerging concepts. *J Invest Dermatol* **122**(2):xxxvi-xxxix, 2004
11. Scott IR, Harding CR: Filaggrin breakdown to water binding compounds during development of the rat stratum corneum is controlled by the water activity of the environment. *Dev Biol* **115**(1):84-92, 1986
12. Sato J et al: Abrupt decreases in environmental humidity induce abnormalities in permeability barrier homeostasis. *J Invest Dermatol* **119**(4):900-904, 2002
13. Tammi R et al: Degradation of newly synthesized high molecular mass hyaluronan in the epidermal and dermal compartments of human skin in organ culture. *J Invest Dermatol* **97**(1):126-130, 1991
14. Sakai S et al: Hyaluronan exists in the normal stratum corneum. *J Invest Dermatol* **114**(6):1184-1187, 2000
15. Rieger M: Hyaluronic acid in cosmetics. *Cosm Toil* **113**(3):35-42, 1998.
16. Sougrat R et al: Functional expression of AQP3 in human skin epidermis and reconstructed epidermis. *J Invest Dermatol* **118**(4):678-685, 2002
17. Takenouchi M, Suzuki H, Tagami H: Hydration characteristics of pathologic stratum corneum—evaluation of bound water. *J Invest Dermatol* **87**(5):574-576, 1986
18. Warner RR, Bush RD, Ruebusch NA: Corneocytes undergo systematic changes in element concentrations across the human inner stratum corneum. *J Invest Dermatol* **104**(4):530-536, 1995
19. Warner RR, Myers MC, Taylor DA: Electron probe analysis of human skin: element concentration profiles. *J Invest Dermatol* **90**(1):78-85, 1988
20. Ma T et al: Impaired stratum corneum hydration in mice lacking epidermal water channel aquaporin-3. *J Biol Chem* **277**(19):17147-17153, 2002
21. Yang B, Verkman AS: **Water and glycerol permeabilities of aquaporins 1–5 and MIP determined quantitatively by expression of epitope-tagged constructs in *Xenopus* oocytes.** *J Biol Chem* **272**(26):16140-16146, 1997
22. Dumas M et al: Effect of an *Ajuga turkestanica* extract on aquaporin 3 expression, water flux, differentiation and barrier parameters of the human epidermis. *Eur J Dermatol* **12**(6):XXV-XXVI, 2002
23. Thiboutot D: Regulation of human sebaceous glands. *J Invest Dermatol* **123**(1):1-12, 2004
24. Clarys P, Barel A: Quantitative evaluation of skin surface lipids. *Clin Dermatol* **13**(4):307-321, 1995
25. Thody AJ, Shuster S: Control and function of sebaceous glands. *Physiol Rev* **69**(2):383-416, 1989

26. Gomez EC: Differential effect of 13-cis-retinoic acid and an aromatic retinoid (Ro 10-9359) on the sebaceous glands of the hamster flank organ. *J Invest Dermatol* **76**(1):68-69, 1981
27. Geiger JM: Retinoids and sebaceous gland activity. *Dermatology* **191**(4):305-310, 1995
28. Elias PM et al: Retinoid effects on epidermal structure, differentiation, and permeability. *Lab Invest* **44**(6):531-540, 1981
29. Mathers WD, Lane JA: Meibomian gland lipids, evaporation, and tear film stability. *Adv Exp Med Biol* **438**:349-360, 1998
30. Tiffany JM: The role of meibomian secretion in the tears. *Trans Ophthalmol Soc UK* **104**(Pt 4):396-401, 1985
31. Fluhr JW et al: Glycerol regulates stratum corneum hydration in sebaceous gland deficient (asebia) mice. *J Invest Dermatol* **120**(5):728-737, 2003
32. Fluhr JW et al: Glycerol accelerates recovery of barrier function in vivo. *Acta Derm Venereol* **79**(6):418-421, 1999
33. Pochi PE, Strauss JS, Downing DT: Age-related changes in sebaceous gland activity. *J Invest Dermatol* **73**(1):108-111, 1979
34. Walton S, Wyatt EH, Cunliffe WJ: Genetic control of sebum excretion and acne—a twin study. *Br J Dermatol* **118**(3):393-396, 1988
35. De Pedrini P, Rapisarda R, Spano G: The effect of ketoconazole on sebum secretion in patients suffering from acne and seborrhoea. *Int J Tissue React* **10**(2):111-113, 1988
36. Goldstein JA et al: Comparative effect of isotretinoin and etretinate on acne and sebaceous gland secretion. *J Am Acad Dermatol* **6**(4 Pt 2 Suppl):760-765, 1982
37. Matheson AJ, Perry CM: Glucosamine: a review of its use in the management of osteoarthritis. *Drugs Aging* **20**(14):1041-1060, 2003
38. Murad H, Tabibian MP: The effect of an oral supplement containing glucosamine, amino acids, minerals, and antioxidants on cutaneous aging: a preliminary study. *J Dermatolog Treat* **12**(1):47-51, 2001
39. Spruit D: The interference of some substances with the water vapour loss of human skin. *Dermatologica* **142**(2):89-92, 1971
40. Draelos Z: Moisturizers. In: *Atlas of Cosmetic Dermatology*, edited by Z Draelos. New York, Churchill Livingstone, 2000, p. 83
41. Wehr RF, Krochmal L: Considerations in selecting a moisturizer. *Cutis* **39**(6):512-515, 1987
42. Idson B: Dry skin: moisturizing and emolliency. *Cosmet Toiletr* **107**:69, 1992
43. Mitsui T, ed.: *New Cosmetic Science*. New York, Elsevier, 1997, p. 134
44. Draelos Z: Moisturizers. In: *Atlas of Cosmetic Dermatology*, edited by Z Draelos. New York, Churchill Livingstone, 2000, p. 85
45. Chernosky ME: Clinical aspects of dry skin. *J Soc Cosmet Chem* **27**:65, 1976
46. Jackson EM: The science of cosmetics. *Am J Contact Dermat* **4**:108, 1993
47. Farage MA: How do perceptions of sensitive skin differ at different anatomical sites? An epidemiological study. *Clin Exp Dermatol* **34**:e521-e530, 2009
48. Fisher AA: Cosmetic dermatitis. Part II. Reactions to some commonly used preservatives. *Cutis* **26**(2):136-137, 141-142, 147-148, 1980
49. Cotterill JA: Clinical features of patients with dermatologic nondisease. *Semin Dermatol* **2**:203, 1983
50. Mitsui T ed.: Cosmetics and Skin. In: *New Cosmetic Science*. New York, Elsevier, 1993, p. 28
51. Simion AF: Acnegenicity and comedogenicity testing for cosmetics. In: *Handbook of Cosmetic Science and Technology*, edited by AO Bareil, M Paye, HI Maibach. New York, Marcel Dekker, 2001, p. 837
52. Kligman AM, Mills OH Jr: "Acne cosmetica." *Arch Dermatol* **106**(6):843-850, 1972
53. Kligman AM: Petrolatum is not comedogenic in rabbits or humans: a critical reappraisal of the rabbit ear assay and the concept of "acne cosmetica." *J Soc Cosmet Chem* **47**:41, 1996
54. Hahn GS: Anti-irritants for sensory irritation. In: *Handbook of Cosmetic Science and Technology*, edited by AO Bareil, M Paye, HI Maibach, New York, Marcel Dekker, 2001, p. 285
55. Frosch PJ, Kligman AM: A method for appraising the stinging capacity of topically applied substances. *J Soc Cosmet Chem* **28**:197-209, 1977
56. Seidenari S, Francomano M, Mantovani L: Baseline biophysical parameters in subjects with sensitive skin. *Contact Dermatitis* **38**(6):311-315, 1998
57. Basketter DA, Griffiths HA: A study of the relationship between susceptibility to skin stinging and skin irritation. *Contact Dermatitis* **29**(4):185-188, 1993

58. Orton DI, Wilkinson JD: Cosmetic allergy: incidence, diagnosis, and management. *Am J Clin Dermatol* 5(5):327-337, 2004
59. Mehta SS, Reddy BS: Cosmetic dermatitis current perspectives. *Int J Dermatol* 42(7):533-542, 2003
60. Jovanovic M et al: Contact allergy to Compositae plants in patients with atopic dermatitis. *Med Pregl* 57(5-6):209-218, 2004
61. Berardesca E, Distanto F: Bioengineering: methods. In: *The Irritant Contact Dermatitis Syndrome*, edited by PGM van der Valk, HI Maibach. Boca Raton, FL, CRC Press, 1996, p. 313
62. Levin C, Maibach H: Exploration of "alternative" and "natural" drugs in dermatology. *Arch Dermatol* 138(2):207-211, 2002
63. Amin S, Maibach HI: Immunologic contact urticaria definition. In: *Contact Urticaria Syndrome*, edited by S Amin, A Lahti, HI Maibach. Boca Raton, FL, CRC Press, 1997, p. 11
64. Wedi B: Urticaria. *J Dtsch Dermatol Ges* 6(4):306-317, 2008
65. Hannuksela M: Cosmetics, cosmetic ingredients, emulsifiers, and moisturizers, In: *Contact Urticaria Syndrome*, edited by S Amin, A Lahti, HI Maibach. Boca Raton, FL, CRC Press, 1997, p. 111
66. Adams RM, Maibach HI: A five-year study of cosmetic reactions. *J Am Acad Dermatol* 13(6):1062-1069, 1985
67. Curry AS, McEwen GN, Duelly MM: *Cosmetic Industry on Call 2002*. Washington, DC, Cosmetic, Toiletry and Fragrance Association, 2002
68. de Groot AC et al: *Unwanted Effects of Cosmetics and Drugs Used in Dermatology*, 3rd edition. New York, Elsevier, 1994
69. Nakada T, Hostynek JJ, Maibach HI: Use tests: ROAT (repeated open application test)/PUT (provocative use test): an overview. *Contact Dermatitis* 43(1):1-3, 2000
70. Andersen KE et al: The time-dose-response relationship for elicitation of contact dermatitis in isoeugenol allergic patients. *Toxicol Appl Pharmacol* 170(3):166-171, 2001
71. de Groot AC, Frosch PJ: Adverse reactions to fragrances. A clinical review. *Contact Dermatitis* 36(2):57-86, 1997
72. Zug KA et al: Patch-test results of the North American Contact Dermatitis Group 2005–2006. *Dermatitis* 20(3):149-160, 2009
73. Jacob SE: Contact dermatitis (Type 4 sensitive skin). In: *Cosmetic Dermatology: Principles and Practice*, 2nd edition, edited by L Baumann, S Saghari, E Weisberg. New York, McGraw-Hill, 2009, p. 138
74. Opdyke DL: Monographs on fragrance raw materials. *Food Cosmet Toxicol* 13(4):449-457, 1975
75. Frosch PJ et al: Further important sensitizers in patients sensitive to fragrances. I. Reactivity to 14 frequently used chemicals. *Contact Dermatitis* 47(2):78-85, 2002
76. Frosch PJ et al: Patch testing with a new fragrance mix detects additional patients sensitive to perfumes and missed by the current fragrance mix. *Contact Dermatitis* 52(4):207-215, 2005
77. Weisberg E, Baumann L: Fragrance. In: *Cosmetic Dermatology: Principles and Practice*, 2nd edition, edited by L Baumann, S Saghari, E Weisberg. New York, McGraw-Hill, 2009, p. 326
78. Cashman AL, Warshaw EM: Parabens: a review of epidemiology, structure, allergenicity, and hormonal properties. *Dermatitis* 16(2):57-66, 2005
79. Rastogi SC et al: Contents of methyl-, ethyl-, propyl-, butyl- and benzylparaben in cosmetic products. *Contact Dermatitis* 32(1):28-30, 1995
80. Funk JO, Maibach MI: Propylene glycol dermatitis: re-evaluation of an old problem. *Contact Dermatitis* 31(4):236-241, 1994
81. Fransway AF: The problem of preservation in the 1990s: I. Statement of the problem, solution(s) of the industry, and the current use of formaldehyde and formaldehyde-releasing biocides. *Am J Contact Dermat* 2:6, 1991
82. Geier J et al: Patch testing with methyl-dibromoglutaronitrile. *Am J Contact Dermat* 11(4):207-212, 2000
83. Gruvberger B et al: Patch testing with methyl-dibromo glutaronitrile, a multicentre study within the EEC DRG. *Contact Dermatitis* 52(1):14-18, 2005
84. Freedberg IM et al, eds.: *Fitzpatrick's Dermatology in General Medicine*, 5th edition. New York, McGraw-Hill, 1999, p. 996
85. Szabo G et al: Racial differences in the fate of melanosomes in human epidermis. *Nature* 222(198):1081-1082, 1969
86. Paine C et al: An alternative approach to depigmentation by soybean extracts via inhibition of the PAR-2 pathway. *J Invest Dermatol* 116(4):587-595, 2001

87. Hakozaiki T et al: The effect of niacinamide on reducing cutaneous pigmentation and suppression of melanosome transfer. *Br J Dermatol* **147**(1):20-31, 2002
88. Hermanns JF et al: Unraveling the patterns of subclinical pheomelanin-enriched facial hyperpigmentation: effect of depigmenting agents. *Dermatology* **201**(2):118-122, 2000
89. Boukamp P: Ageing mechanisms: the role of telomere loss. *Clin Exp Dermatol* **26**(7):562-565, 2001
90. Boukamp P: Skin aging: a role for telomerase and telomere dynamics? *Curr Mol Med* **5**(2):171-177, 2005
91. Kronic D et al: Tissue context-activated telomerase in human epidermis correlates with little age-dependent telomere loss. *Biochim Biophys Acta* **1792**(4):297-308, 2009
92. Uitto J: Understanding premature skin aging. *N Engl J Med* **337**(20):1463-1465, 1997
93. Kosmadaki MG, Gilchrest BA: The role of telomeres in skin aging/photoaging. *Micron* **35**(3):155-159, 2004
94. Marrot L, Beladi JP, Meunier JR: Importance of UVA photoprotection as shown by genotoxic related endpoints: DNA damage and p53 status. *Mutat Res* **571**(1-2):175-184, 2005
95. Gilchrest BA, Eller MS, Yaar M: Telomere-mediated effects on melanogenesis and skin aging. *J Investig Dermatol Symp Proc* **14**(1):25-31, 2009
96. Baumann L: How to prevent photoaging? *J Invest Dermatol* **125**(4):xii-xiii, 2005
97. Fitzpatrick RE: Endogenous growth factors as cosmeceuticals. *Dermatol Surg* **31**(7 Pt 2):827-831; discussion 831, 2005
98. Kang S et al: Topical N-acetyl cysteine and genistein prevent ultraviolet-light-induced signaling that leads to photoaging in human skin in vivo. *J Invest Dermatol* **120**(5):835-841, 2003
99. Varani J et al: Vitamin A antagonizes decreased cell growth and elevated collagen-degrading matrix metalloproteinases and stimulates collagen accumulation in naturally aged human skin. *J Invest Dermatol* **114**(3):480-486, 2000
100. Nusgens BV et al: Topically applied vitamin C enhances the mRNA level of collagens I and III, their processing enzymes and tissue inhibitor of matrix metalloproteinase 1 in the human dermis. *J Invest Dermatol* **116**(6):853-859, 2001
101. Margelin D et al: Hyaluronic acid and dermatan sulfate are selectively stimulated by retinoic acid in irradiated and nonirradiated hairless mouse skin. *J Invest Dermatol* **106**(3):505-509, 1996
102. Tajima S, Hayashi A, Suzuki T: Elastin expression is up-regulated by retinoic acid but not by retinol in chick embryonic skin fibroblasts. *J Dermatol Sci* **15**(3):166-172, 1997
103. Kockaert M, Neumann M: Systemic and topical drugs for aging skin. *J Drugs Dermatol* **2**(4):435-441, 2003
104. Ostler EL et al: Telomerase and the cellular lifespan: implications of the aging process. *J Pediatr Endocrinol Metab* **13**(Suppl. 6):1467-1476, 2000
105. Boukamp P, Mirancea N: Telomeres rather than telomerase a key target for anti-cancer therapy? *Exp Dermatol* **16**(1):71-79, 2007