

The Role of Cosmeceuticals and Skin Care in an Aesthetic Practice

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DISCLOSURES

- Galderma
- Allergan
- Procter and Gamble
- Ranbaxy
- Revance
- Valeant
- Aclaris
- Biopelle
- Ferndale

- Popularity and growth of minimally invasive procedures
 - Baby boomers - ↑ spending beauty services
 - 8,000 people a day turn 65!
 - increased 6% last year
 - Americans spent over \$1.8 billion dollars on non surgical skin rejuvenation procedures 2012
 - "lipstick" effect → "injection effect"
 - social media driving cosmetic procedures
- ASDS consumer survey
 - most bothered by midface and sagging
 - very concerned about excess weight anywhere
 - hair loss
 - 83% considering cosmetic procedure
 - major demographic is working women (41-60)
- ASDS survey (212) – procedure breakdown
 - neuromodulators – 1.5 million (6.1 million injections)
 - 89% female
 - soft tissue fillers – almost 1 million
 - 92% female
 - increase soft-tissue filler treatments 2011-2012: 10.4%

Customizing and Combining Treatments

- Global improvement
 - skin quality – tone, texture, blemishes, dyschromias
 - muscle relaxing
 - volume replacement – "contour"
 - tightening
 - re-draping, reflation
 - four "R"s: relax, refill, resurface, redrape
- "Perfect" Face
 - skin care, topicals-retinoids, cosmeceuticals
 - peels, microdermabrasion
 - lasers, lights, IPL, RF, ultrasound
 - toxins, fillers
 - heart – shaped or oval faces – periphery (lateral > medial; superior > inferior)
- Body
 - contouring devices
 - sclerotherapy
 - hair removal

Top Five Minimally Invasive Cosmetic Procedures

- Botulinum Toxin
- Soft tissue fillers
- Chemical peels
- Laser hair removal
- Microdermabrasion

- Cosmeceutical market has grown significantly over last two decades
- Global skin care market will reach \$196.67 billion by 2024
- Sales of products in physicians offices may reach \$1 billion by 2017
- US
 - ❖ Over 80% physicians dispense cosmeceuticals
 - ❖ 75% physicians have at least one non-medical treatment room
 - ❖ Only 61% patients leave office after laser treatment with recommendation for long – term skin care regimen
- Blurring of lines of distinction between OTC and dispensed skin care products
- Quality of OTC products → choices, options, questions

Patient Concerns

- Dryness
- Redness, inflammation
- Discoloration
- Antiaging, wrinkles
- Acne, rosacea, pores
- Hair growth

Product Categories

- Sunscreen
- Hydration/barrier repair
- Antioxidant
- Anti-inflammatory
- Pigment lightening
- Collagen repair

Oxidative Damage

- Oxidative stressors create inflammatory pathways → formation of free radicals (highly reactive molecules with unpaired electrons)
- Cellular damage to
 - cell membranes
 - lipids → lipid peroxidation
 - proteins
 - DNA → DNA damage → collagen breakdown
- Inflammation, photodamage, carcinogenesis
- Antioxidants – neutralize damaging free radicals
 - protect cells from endogenous stress (by products of cellular energy)
 - protection from exogenous stress (UVI pollution cigarettes ozone)

Antioxidants

- Vitamin A – retinol
- Vitamin B
- Vitamin C – photoprotective,
↓ immunosuppression
- Vitamin E

Antioxidants-Antiinflammatories

- Niacinamide (β_3) – improves barrier function
 - ↑ synthesis lipids (ceramides and FFA's)
 - ↑ epidermal proteins (keratin, filaggrin)
 - humectant (panthenol β_5)
- Polyphenols – flavonoids
 - soy - ↑ skin thickness
 - green tea - ↓ sunburn cells, erythema
 - coffee berry - ↓ UV induced erythema
 - grape seed extract

Antioxidants-Polyphenols

- Plant derived
- Antioxidant, antiinflammatory, photoprotective, anticarcinogenic (inhibit activator protein 1) (AP-1)
- Grape seed extract – dermal wound healing – induce vascular endothelial growth factor expression on keratinocytes
- Resveratrol – phyto alexin – skin of grapes and red wine (viniferins) - protect plants from stress, UVL
 - ↑ cathecolidin expression
- Sirtuins – enzymes – activated by resveratrol
 - ↑ DNA repair → ↓ cell senescence

Polyphenols - Flavonoids

- Isoflavones – genistein, daidzein
 - tofu, soy beans (fermented soy products)
 - antioxidant, antiinflammatory, anticarcinogenic, photoprotective
 - function as phytoestrogens → increase skin thickness through estrogenic effect
 - ↑ collagen production and elastin repair
 - Serine protease inhibitors
 - STI (soybean trypsin inhibitor) – inhibits melanosome transfer to keratinocytes → skin lightening
 - BBI (Bowman-Birk inhibitor) – inhibits hair growth

Antiinflammatories

- Botanicals - ↓ proinflammatory mediators (cytokines, PG's)
 - oats – avenanthramides
 - olive oil
 - licence extract
 - lycopene, mangosteen
 - feverfew
 - chamomile, aloe vera
 - cercumin
 - caffeine

“Neutraceuticals”

- Oral supplements or flavored beverages
- Green tea, soy, grape seed extract
- Carotenoids-Lycopene, Lutein, mangosteen
- Resveratrol (and sirtuins)
- Polypodium leucotomos extract – antioxidants, ↓MMPs, ↓thymine dimers
- Co enzyme Q₁₀, vitamins C and E
- Alpha – 3 – omega acids
- “Nutricosmetic” – oral + topical

Supplements

- Heliocare
 - polypodium leucotomos extract derived from fern
 - polyphenol enriched
 - antioxidant, photoprotective, anti-inflammatory
- Niacinamide (vitamin B₃)
 - NMSC, ? Melanoma
- Viviscal
 - shark cartilage, protein

- Nutrafol
 - proteins, antioxidants, anti-inflammatories (curcumin)
 - saw palmetto (DHT blocker)
- Lumity
 - amino acids, vitamins, minerals, antioxidants
 - glycation, insulin resistance, telomere shortening
- Aethern
 - peptides, selenium, antioxidants, polyphenols (pine bark), zinc

Pigment Lightening

- Tyrosinase activity
 - Hydroquinone
 - Kojic acid – binds to copper
 - Vitamins C and E, Azelaic acid
 - Arbutin (bearberry plant)
 - Licorice extract
 - Fatty acids (linoleic acid) – tyrosine degradation
- Melanin transfer
 - Niacinamide (B₃) – melanosome transfer
 - Soy (STI)

Lines for Pigmentation

- OTC
 - Olay Pro X Even Skin Tone-niacinamide,
 - Neutrogena Rapid Tone Repair- HA, vit C
 - Aveeno - soy
 - Clinique - Dark spot corrector Dispensed
- Lytera - retinol, linoleic acid, niacinamide, licorice
- Skinceuticals pigment regulator - kojic acid

Collagen Repair

- Peptides
 - Wound healing
 - Stimulate collagen production by fibroblasts
 - Regenerist
 - » Niacinamide, peptides, pal KTTKS
- Retinol
 - Neutrogena Rapid Wrinkle Repair – HA
 - ROC
 - PCA, Sente

Skin better

- Alpha Ret
 - Retinoid combined with lactic acid
 - Glycolic acid, peptides, glycerin, niacinamide
- Lines
 - Interfuse technology → large Has can penetrate through lipid barrier
 - Peptides, vitamin C
- Face – polyphenols (olive trees), peptides
- Eyes – HA, neuropeptides, vitamin C, caffeine
- Alto serum - antioxidants

Collagen Repair - Growth factors

- Act as chemical messengers between cells
- Regulatory proteins that attach to cell surface receptors
- Enhance wound healing, vascular neogenesis
- Induce collagen and GAG formation, ↑grenz zone collagen → thicken epidermis
- Sources
 - ❖ cultured human cells
 - ❖ generically engineered microorganisms (can be produced in bacteria and yeast)
 - ❖ Adipose stem cells
 - ❖ Plant stem cells
 - ❖ Cannot be synthetically created

Growth Factors

- Bio-Gel
 - – biorestorative hydrogel
 - – PSP + hyaluronic acid
 - – oil free
- TNS Essential Serum
 - – growth factors
 - – antioxidants, matrix proteins, peptides
- Regenica recovery gel

Stem cells

- Wound healing, burns, e. bullosa
- Source: adipose tissue, blood, plasma, plants
- Topical creams: pluripotent stem cells stimulate collagen, elastin and fibronectin

Tensage

- Growth factor serum secretion derived from snails
- Generated during stress to regenerate damaged tissue (extrinsic aging)
- Stem cell cream also derived from snail eggs
- Pluripotent cells activate skin stem cells within hair follicle bulge – migrate and differentiate into keratinocytes and fibroblasts (intrinsic aging)
- Retinol, peptides, vitamins C and E

Alastin Skin Nectar

- Anhydrous lipid gel
- Elastin – decreases with age
- Tropoelastin – water soluble elastin monomer made by dermal fibroblasts → secreted into extracellular matrix → cross linked to form elastic fibers and collagen
- Trihex technology – contains proprietary blend of peptides
- Antioxidants, ceramides, niacinamide, HA
- Post procedure, hydration

Organic

- Complementary and alternative medicine
- USDA: organic food – no pesticides, herbicides or hormones
- No certification for “body” products – hard to define “natural”
- Some natural organic ingredients: “oil” form, contact dermatitis
- Some products contain additives and preservatives
- Variations in growing conditions (soil, water, climate)
- Synthetic (made in lab) – not necessarily “bad” for you!

Natural ingredients found in skin care products

- **Botanicals:** preparations made from plants (e.g., herbs, roots, flowers, fruits, leaves or seeds) that are valued for medicinal or therapeutic properties, flavor, and/or scent.
- **Essential oils:** obtained by cold press, steam, or dry distillation from cells, cavities, glands, roots, stems, leaves, flowers, fruit, seeds, and hairs of plants (without any chemicals).
- **Natural oils**
 - Mineral oil
 - Vegetable oil

Ingredients patients are asking about

	Synthetic fragrances & Dyes 2% of the general population is fragrance allergic. <small>(Br J Dermatol. 2008 Feb;157(2):219-20)</small>
	Sulfates Can disrupt and degrade the lipid barrier. <small>(Dermatol Res Pract. 2012;2012:405917)</small>
	Parabens Under scrutiny for alleged estrogenic and antiandrogenic effects. <small>(Dermatol. 2010 Nov-Dec;36(5):54-6)</small>
	Phthalates Classified as endocrine disrupting chemicals. <small>(Environ Int. 2010 Dec;37:212-230)</small>
	Urea May cause irritation after application. <small>(Acta Derm Venereol. 2002;82(1):45-5)</small>

Nanotechnology

- Rapidly growing field
- Nanoparticles are 1-100 nanometers (nm)
- Targeted active ingredient delivery system
- Skin Care: sunscreens, cosmetics, moisturizers, deodorants, perfumes
- Anti-aging products: retinoids, antioxidants, growth factors, neurotoxins, vitamins
- Benefits of nanoemulsions: stabilization, targeted delivery and deep penetration
- Safety concerns: ? can generate reactive oxygen species, toxicities due to penetration of intact skin.

Exfoliation

- Mechanical
 - microdermabrasion
 - cloths
- Chemical
 - retinoids
 - salicylic acid, LHA
 - alpha hydroxy acids

Emerging Technologies: Home Devices

- Cleansing
- Exfoliating
- Acne
- Antiaging
- Unwanted hair

Recommendations

- Protect and repair
- **Sunprotection**, antioxidants and **retinoids**, peptides
- Combinations with complementary benefits
- Combine with in-office procedures