THE INTEGUMENTARY SYSTEM

ANIMAL AROMATHERAPY SPECIALIST CERTIFICATION LEVEL 2 TRAINING

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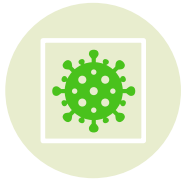
THE INTEGUMENTARY SYSTEM - AGENDA

INTRODUCTION

ALLERGIC SKIN DISEASES

BACTERIAL SKIN DISEASES

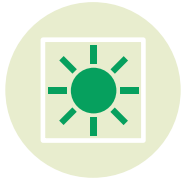


VIRAL SKIN DISEASES

FUNGAL SKIN DISEASES

PARASITIC CONDITIONS

NEOPLASIA

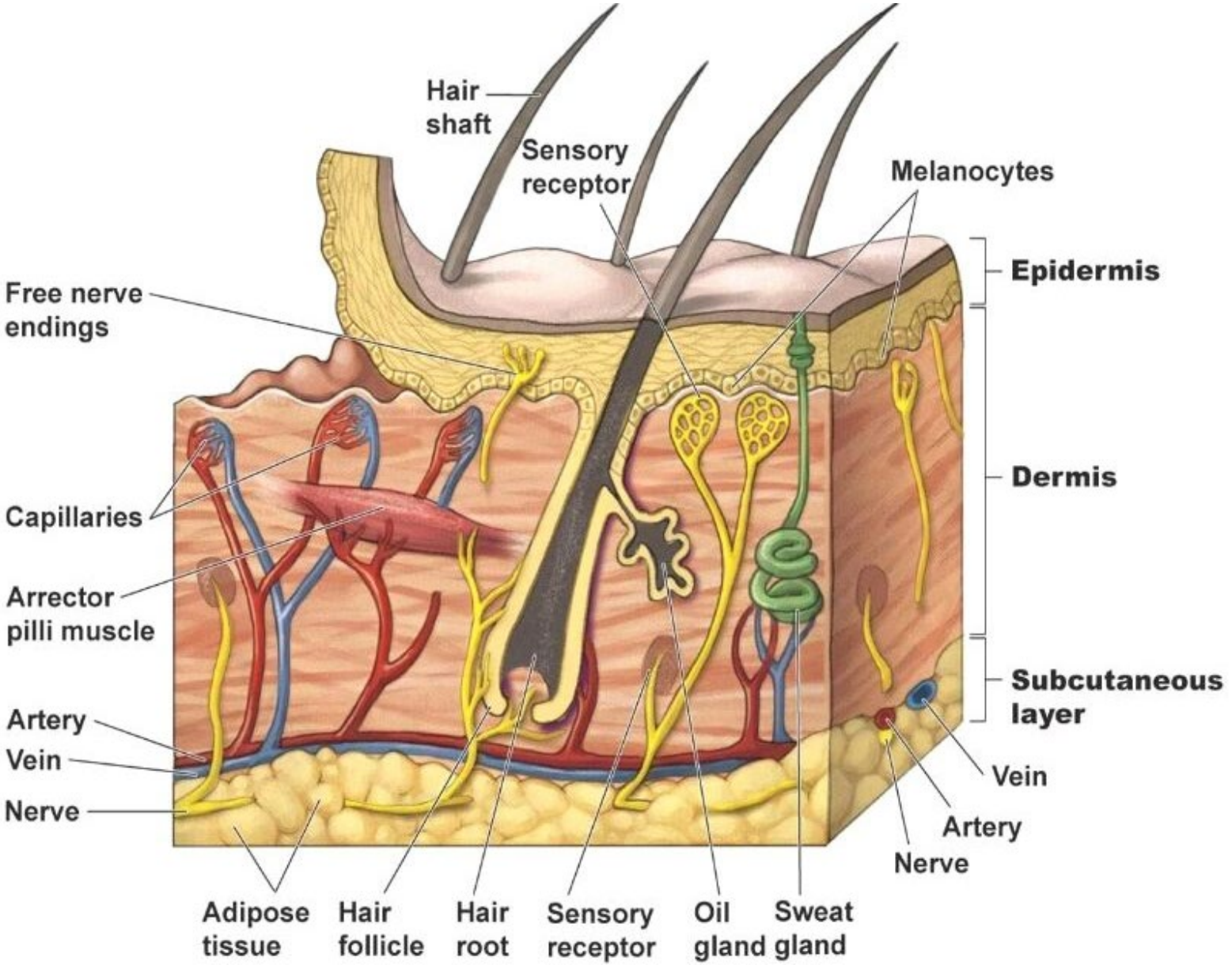


PHOTOSENSITIZATION

QUESTIONS?

THE INTEGUMENTARY SYSTEM - INTRODUCTION

- The skin is the largest organ of the body – 12-24% of body weight depending on species!
- Functions: Enclosing barrier, environmental protection, regulating temperature, producing pigment and vitamin D, sensory perception.
- Anatomy: Epidermis, Basement membrane, Dermis, Appendageal system, and subcutaneous muscles and fat



ANATOMY - CONTINUED

- Epidermis – Thicker in large animals
  - Keratinocytes – Protective barrier – Migrate upwards and programmed cell death = keratinization – compact layer of dead cells (stratum corneum) – impermeable barrier to loss of fluids, electrolytes, minerals, nutrients and water, and prevent infectious agents from entering.
  - Melanocytes – located in the basal cell layer, outer root sheath and ducts of sebaceous and sweat glands. Pigment production is hormonal/ genetic.
  - Langerhans cells – regulates the immune system of the skin – damaged by UV lite and glucocorticoids. Antigenic and allergic material is processed by these cells to induce hypersensitivity reactions.
  - Merkel Cells – specialized sensory cells – whiskers
- Basement Membrane – protective barrier between the epidermis and dermis – several autoimmune diseases can damage this zone – Vesicles = damaged basement membrane.

ANATOMY - CONTINUED

- Dermis – supports, nourishes, regulates the epidermis. Consists of Ground Substance, dermal collagen fibers and cells (fibroblasts, melanocytes, mast cells, occasional eosinophils, neutrophils, lymphocytes, histiocytes, and plasma cells), blood vessels (for thermoregulation), nerve plexuses (cutaneous sensation) and nerves, motor nerves, arrector pili muscles and hair follicles as well as tactile structures.
  - Responds to sensations of touch, pain, itch, heat and cold
- Appendageal system – grow out of the epidermis – hair follicles, sebaceous and sweat glands, and specialized structures like claw/ hoof
  - Hair follicles of horses and cattle = 1 hair per pore. Cats, dogs, sheep and goats = central hair surrounded by 3-15 smaller hairs from a common pore – start out with simple hair follicles and develop into complex hair follicles
  - Hair growth is affected by nutrition, hormones and photoperiod. Animals shed their hair in response to temperature change and photoperiod – usually early spring and early fall
  - Functions of hair coat: mechanical barrier, thermoregulation – conserves heat by trapping dead air between secondary hairs (must be dry and waterproof) and cools the skin.
  - Sebaceous glands – large numbers face, interdigital spaces, top of neck, rump, chin and tail area – part of the scent marking system (includes pheromones – cats rubbing face on things.)
  - Sweat glands – thermoregulation
- Subcutaneous muscles and fat – “Twitch muscles” and fat function helps with insulation, and is a reservoir for fluids, electrolytes, and energy, also shock absorption.

DERMATITIS

- “Inflammation of the skin” – caused by external irritants, burns, allergens, trauma, infection, hereditary factors
- Body’s response: itching scaling, redness, darkening of skin, oily skin, odor, and hair loss. Can progress to lesions like pustules and vesicles. Often associated with secondary bacterial or fungal infections. As the disease progresses or becomes chronic, less redness and more dryness can happen.
- Address the underlying condition, and support the skin
  - Oils: Antihistamine, skin soothing, wound healing, antimicrobial, anti-inflammatory
  - Lavender, Helichrysum, Frankincense, Copaiba, Roman Chamomile, Yarrow, Manuka, Myrrh, Tea Tree, Geranium, Rose
  - Antihistamine oils: Lemongrass, Chamomile, Sandalwood, Lemon, Frankincense, Ravensara, Lavender

ALOPECIA- HAIR LOSS

- Partial or complete lack of hairs where there are normally hairs.
- Many causes – hereditary or acquired, inflammatory or non-inflammatory.
  - Inflammatory acquired is the most common – causes the animal discomfort
  - Check for underlying condition first (e.g. fleas)
- Address Underlying condition
- Oils to promote hair growth: Rosemary, Lavender, Cypress, Cedarwood

ALLERGIC SKIN DISEASES

- Atopic Dermatitis – inhaled allergies (environmental, but not contact allergies) – 10% canines have this
  - Avoid allergies as much as possible- reduce exposure (pollen, dust, mold) – indoor filters, keeping pet inside hypoallergenic shampoos, cool water or chamomile tea rinses, Omega 3 EFAs
- Flea Allergy Dermatitis (see parasitic conditions)
- Food Allergy – 10%
  - Elimination diet – work with VET – must be fed for up to 3 months until resolution of symptoms
- Urticaria (Hives)
  - Plants/ contact dermatitis – stinging nettle, insect bites, topical anything, exposure to chemicals, pressure, sunlight, heat, exercise, stress
  - WASH THE ANIMAL, once dry use oils – good time for internal oils as well.
- Oils: Anti-histamine, Anti-inflammatory, wound healing as needed
- Lemon, Lavender, Peppermint, Frankincense, Copaiba, Roman Chamomile, Petitgrain, Cedarwood

BACTERIAL SKIN DISEASES

- Dermatophilosis (Rain Rot | Lumpy Wool)
  - Scab formation and clumps of hair falling out
  - Ticks and lice predispose to this condition
  - Address grooming and hygiene
  - Shampoo with anti-bacterial oils – Tea tree, Lavender, and Rosemary. Even oregano, cinnamon and clove in some cases that are not irritated.
- Exudative Epidermitis (greasy pig disease) – staph infection
  - Address hygiene and nutrition
- Interdigital Furunculosis – deep bacterial infection
  - Lavender, Frankincense, Myrrh
- Pyoderma – “pus in the skin”
  - Causes: infectious, inflammatory or neoplastic but most commonly bacterial – typically an overgrowth of normal resident flora.
  - Warm, moist areas of the skin – facial folds, neck folds, lip folds, axillary, interdigital areas, vulvar folds and tail folds. Also pressure points due to follicle irritation.
- Anti-bacterial and Antimicrobial oils, as well as wound healing oils
  - Lavender, Tea Tree, Frankincense

VIRAL SKIN DISEASES

- Contagious Ecthyma (Orf – Sheep & Goats)
  - Primarily the lips of young animals. Zoonotic. Infection is via contact.
  - Antiviral oils – may be difficult to give orally due to pain via drench, so topical may be needed first.
- Pox Diseases
  - Fowlpox, sheeppox, swinepox, monkeypox, etc.
  - Oregano, Thyme, Cinnamon, Clove, Rosemary
- Ulcerative Dermatosis (sheep)
  - Lip and leg ulcerations, venereal lesions, often unrecognized until the lesions are advanced.
- Cinnamon, Clove, Rosemary, Cedarwood, Oregano, Thyme, Lemongrass, Tea Tree

FUNGAL SKIN DISEASES

- Dermatophytosis (Ringworm)
  - Patchy hair loss
  - Antifungal oils: Tea Tree, Turmeric, Geranium, Rosemary, Lemongrass, Thyme, Oregano, Peppermint, Roman Chamomile, Lavender
- Candida – Redness or pigmentation of the skin
  - Address the underlying issue!!!
  - Lavender, Rosemary, Lemongrass, Geranium, Oregano, Thyme, Myrrh, Lemon, Melissa, Peppermint, Roman Chamomile, Citronella
  - Apple cider vinegar rinses (dilute especially if red and irritated!)

PARASITIC CONDITIONS

- Cuterebra – physically needs to be removed – wound healing oils for the wound left behind. Peppermint can help.
- Fleas
  - Address the itching – antihistamine and anti-inflammatory oils
  - Address the infestation – topical AND ENVIRONMENT (for a minimum of 8 weeks)
  - Largely education based
  - FAD – Flea Allergy Dermatitis – address the fleas AND the allergy together
- Flies – Eucalyptus, Catnip, Tea Tree, Lavender, Citronella, Lemon Eucalyptus, Clove, Peppermint
- Helminths (summer sores) – Thyme, Clove, and wound healing oils after treatment
- Lice – Tea tree, Lavender, Clove, Eucalyptus, Rosemary, Thyme, Cinnamon
- Mange: Thyme, Clove, Coriander, Cinnamon, Lavender, Tea Tree, Citronella, Geranium
- Ticks – Rosemary, Lemongrass, Cedarwood, Peppermint*, Thyme, Geranium*, Turmeric*, Catnip

FLEAS

1. Treat your home – Diffuse Black Pepper, Oregano, and Peppermint in your diffuser.
2. Vacuum all the floors in every room, especially dark areas and under furniture and vacuum furniture. Immediately dispose of vacuum bag or contents in trash can OUTSIDE. 1-2 times per week for 7-8 weeks as eggs hatch
3. Clean hard surfaces and floors with OnGuard Cleaner + Purify
4. Wash ALL Bedding – human and animals – on the hottest setting possible, you may want to utilize a laundromat to wash everything at once.
5. Bathe your pets (all of them) with a natural flea/ tick shampoo or you can add a few drops of Cedarwood, Lavender, or Terrashield to your regular shampoo.
6. Dust DE and Terrashield (20 d per 1 cup DE) on carpet and outside – let dust settle before letting pets around it. Visit diatomaceousearth.com for more info and tips.
7. Dehumidifier for the summer
8. Flea traps – shallow pan of water with dish detergent in it (be sure your pets can get to it)
9. Flea Collar DIY – 3 TBSP water and 4-5 drops EO with a drop or two of dish soap & soak collar in it
10. Homeopathy
11. Flea Comb 1-2 times daily!

NEOPLASIA

- Epidermal and Hair Follicle Tumors
  - Papillomas – Oregano, Thyme, Frankincense
  - Keratoacanthoma – hair follicle – Antitumoral oils
  - Squamous Cell Carcinoma – Epidermis – often caused by prolonged solar injury (e.g. pink skinned horses)
  - Sebaceous gland tumors
- Equine Sarcoids – 36% of skin tumors on horses
- Connective Tissue Tumors
  - Sarcomas
  - Fibromas
  - Nerve Sheath Tumors
  - Adipose Tissue Tumors – Lipomas
  - Vascular Tumors – hemangiomas
- Lymphocytic, Histocytic, and other Cutaneous Tumors
  - Mast Cell Tumors
  - Cutaneous Lymphosarcoma
  - Histiocytosis
- Melanocyte tumors – Melanocytoma vs. Melanoma
- Metastatic tumors

PHOTOSENSITIZATION

- When skin exposed to light and lacking in protective hair or pigmentation becomes more susceptible to UV light due to photodynamic agents – different than sunburn.
- Unstable high-energy molecules are formed when photons react with the photodynamic agent – initiate reactions in the skin, releasing free radicals that causes cell membrane leakage and can lead to skin ulceration, necrosis, and edema.
- Primary photosensitization – occurs when the photodynamic agent is ingested, injected, or absorbed through the skin
- Aberrant pigment metabolism – Type II photosensitization (cattle and cats) – inherited or acquired defective functions of enzymes
- Secondary photosensitization or type III photosensitization – impaired liver function leading to porphyrins accumulating in plasma and absorbing and releasing light energy in eh skin resulting in a phototoxic reaction
- Type IV photosensitivity – unknown pathogenesis or etiology

- Oils causing photosensitization: Bergamot, Cumin, Grapefruit, Kumquat, Lemon, Lime, Tangerine, Wild Orange
- Addressing photosensitization: remove inciting cause, wound healing oils.

QUESTIONS?