Natural Moisturizers & Balms for Healing Damaged Skin

Welcome to Week 5 of our journey into natural skincare formulation. This week, we'll explore the art and science of creating emulsions and balms specifically designed to repair and nourish damaged skin.

Course Agenda: Week 5

1

Emulsion Formulation

Understanding the science of emulsions and how to create stable, effective moisturizers using natural emulsifiers

2

Balms & Butters for Intensive Repair

Exploring occlusive formulations that protect and deeply nourish compromised skin barriers

3

Adapting for Climate & Environment

Learning how to customize formulations based on climate, humidity, and environmental stressors

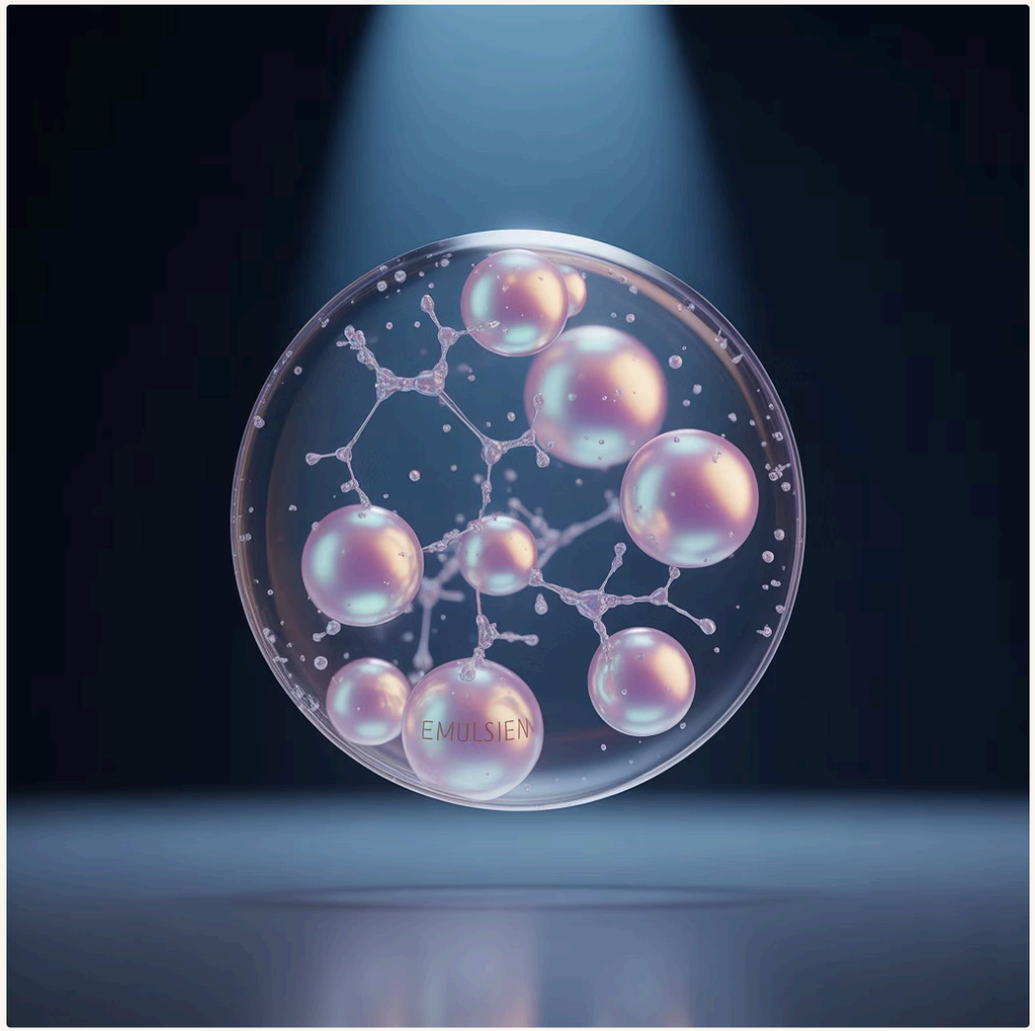
By the end of this week, you'll be able to formulate moisturizers and balms tailored to specific skin conditions and environmental factors.

What Are Emulsions?

Emulsions are stable mixtures of oil and water phases that wouldn't naturally combine without an emulsifier. In skincare, they form the basis of creams and lotions.

Benefits for damaged skin:

- Deliver both water-soluble and oil-soluble active ingredients
- Provide balanced hydration and moisture retention
- Can be formulated with precise absorption rates
- Allow for customizable textures from light to rich
- Create elegant, user-friendly products



An emulsion under magnification: oil droplets (yellow) stabilized by emulsifier molecules in a water phase (blue)

Oil-in-Water vs. Water-in-Oil Emulsions

Oil-in-Water (O/W)

Oil droplets dispersed in water

- Lighter, less greasy feel
- Absorbs quickly
- Good for daily moisturizers
- Better for normal to oily skin
- Examples: lightweight lotions, day creams

Water-in-Oil (W/O)

Water droplets dispersed in oil

- Richer, more occlusive feel
- Creates protective barrier
- Great for extreme repair
- Better for dry or damaged skin
- Examples: cold creams, night creams, balms

For damaged skin, the choice depends on the severity of damage, climate, and specific healing needs.

Natural Emulsifiers

Olivem 1000

Olive-derived, creates biomimetic textures that resemble skin's natural lipids. Excellent for sensitive, damaged skin.

HLB Value: 8-10

Emulsimulse/Ritamulse SCG

Plant-based, creates light but nourishing emulsions. Good for facial moisturizers for damaged skin.

HLB Value: 12-15

BTMS-50

Naturally-derived quaternary compound with conditioning properties. Creates silky, absorbent emulsions.

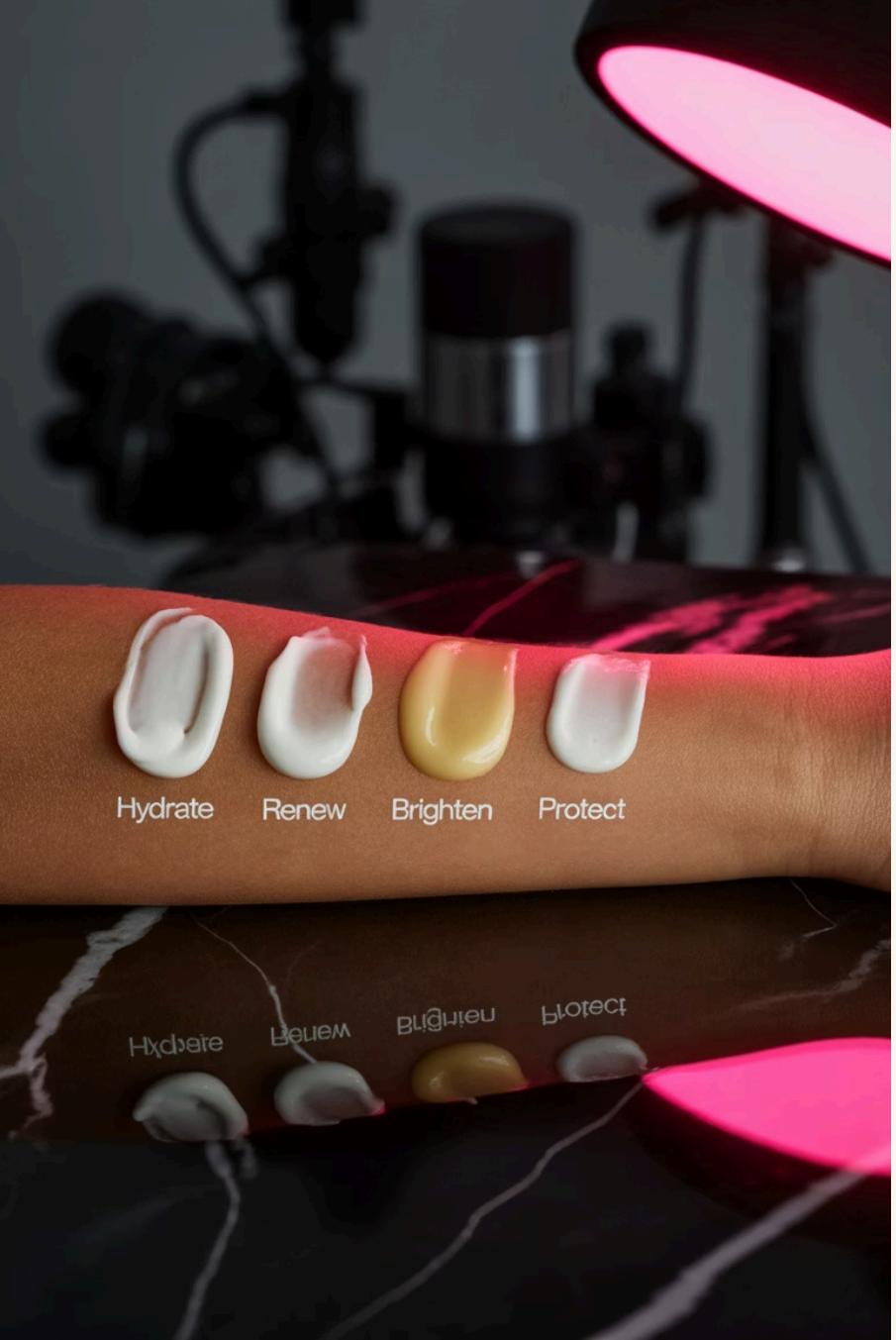
HLB Value: 15

Lecithin

Soy or sunflower-derived phospholipid. Creates gentle emulsions with skin-identical compounds.

HLB Value: 4-9

HLB (Hydrophilic-Lipophilic Balance) indicates whether an emulsifier is more water-loving (higher values) or oil-loving (lower values). Choose based on your desired emulsion type and oil content.



Texture & Absorption

Creating Light, Fast-Absorbing Textures

- Use O/W emulsifiers (Emulsimulse, higher HLB)
- Include 2-4% silica or tapioca starch
- Add 1-3% fast-absorbing oils (grapeseed, rosehip)
- Incorporate 0.5-1% xanthan gum
- Reduce total oil phase to 15-20%

Creating Rich, Protective Textures

- Use W/O emulsifiers (beeswax, lower HLB)
- Add 3-5% botanical butters (shea, cocoa)
- Include 2-5% medium-weight oils (jojoba, olive)
- Incorporate 0.5-2% allantoin for soothing
- Increase total oil phase to 25-40%

For damaged skin, consider starting with richer textures for initial healing, then transitioning to lighter formulations as repair progresses.

Troubleshooting Common Emulsion Problems

Separation

Causes: Incompatible ingredients, incorrect emulsifier percentage, improper temperature during emulsification

Solution: Increase emulsifier by 0.5-1%, ensure oil and water phases are at the same temperature (70-75°C), and blend vigorously during cooling phase

Curdling/Graininess

Causes: Cooling too quickly, incompatible thickeners, hard butters crystallizing

Solution: Cool more gradually, melt butters thoroughly, pre-disperse thickeners, and consider adding 0.5-1% cetyl alcohol as co-emulsifier

Greasy After-feel

Causes: Too much oil phase, heavy oils, insufficient emulsifier

Solution: Reduce oil phase by 5-10%, substitute lighter oils, add 1-2% tapioca starch or silica, increase water-loving emulsifiers

Always make small test batches (50-100g) when troubleshooting formulations to save ingredients and time!

Emulsion Toolkit Checklist

Equipment

- Digital scale (accurate to 0.1g)
- Double boiler or heat-safe glass bowls
- Thermometer (range 0-100°C)
- Immersion blender or milk frother
- pH strips or meter (ideal pH 4.5-5.5)
- Glass stirring rods
- Sanitized containers

Ingredients

- Chosen emulsifier system
- Distilled or purified water
- Therapeutic oils & butters
- Preservative (Leucidal Liquid or Geogard Ultra)
- Thickeners (xanthan gum, cetyl alcohol)
- Humectants (glycerin, aloe vera)
- Active botanicals for repair

Setting up a clean, organized workspace with all tools prepared beforehand makes emulsion creation much smoother.

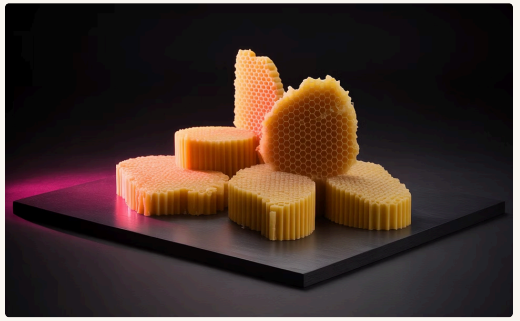
Botanical Butters & Waxes for Intensive Repair

Shea Butter

Rich in vitamins A, E & F; exceptional for dry, cracked skin; melts at body temperature; contains natural anti-inflammatory compounds

Mango Butter

Firmer than shea; high in antioxidants; non-greasy feel; excellent for skin cell regeneration and UV damage repair



Beeswax

Creates protective barrier; antimicrobial properties; helps seal in moisture while allowing skin to breathe; adds structural stability

Candelilla Wax

Plant-based alternative to beeswax; higher melting point; creates glossy finish; excellent for vegan formulations

For damaged skin repair, consider using combinations of butters and waxes to create products with multiple melting points for extended release of healing compounds.

Occlusion vs. Breathability in Healing Balms

The Balancing Act

When creating balms for damaged skin, you must balance occlusion (sealing in moisture) with breathability (allowing skin to receive oxygen and release toxins).

Too occlusive: can trap bacteria and slow healing

Too breathable: insufficient protection and moisture loss

The Ideal Balance for Damaged Skin

For most skin damage: 70-80% protective oils + 20-30% breathable waxes

For severe damage: Add 5-10% zinc oxide for added protection

Most Occlusive

1

Petroleum jelly, lanolin, beeswax >20%

Best for: Extreme environments, severe damage

Moderately Occlusive

2

Balms with 10-15% waxes, high butter content

Best for: Healing cracks, burns, post-procedure

Lightly Occlusive

3

Butter-based creams, low-wax balms (5-10%)

Best for: Daily repair, mild damage, sensitive skin

Breathable

4

Oil-based serums, gel-creams

Best for: Maintenance, humid climates

Basic Repair Balm Recipe

Ingredients

- 30g olive oil infused with calendula (substitute: sunflower or jojoba oil)
- 15g shea butter (substitute: mango or cocoa butter)
- 10g coconut oil (substitute: babassu oil)
- 8g beeswax (substitute: candelilla wax, use 6g)
- 5g rosehip seed oil (substitute: sea buckthorn oil)
- 2g vitamin E oil (preservative)
- 20 drops lavender essential oil (substitute: chamomile or helichrysum)

Method

1. Infuse calendula in olive oil for 2-4 weeks (or heat method: 2 hours at 40°C)
2. Melt beeswax, butters, and oils (except rosehip and essential oils) using double boiler
3. Remove from heat when fully melted
4. Add rosehip oil and vitamin E while still liquid but cooled to about 45°C
5. Add essential oils at around 40°C and stir well
6. Pour into sterilized jars and allow to set for 24 hours

Shelf life: 6-12 months when stored in cool, dark place

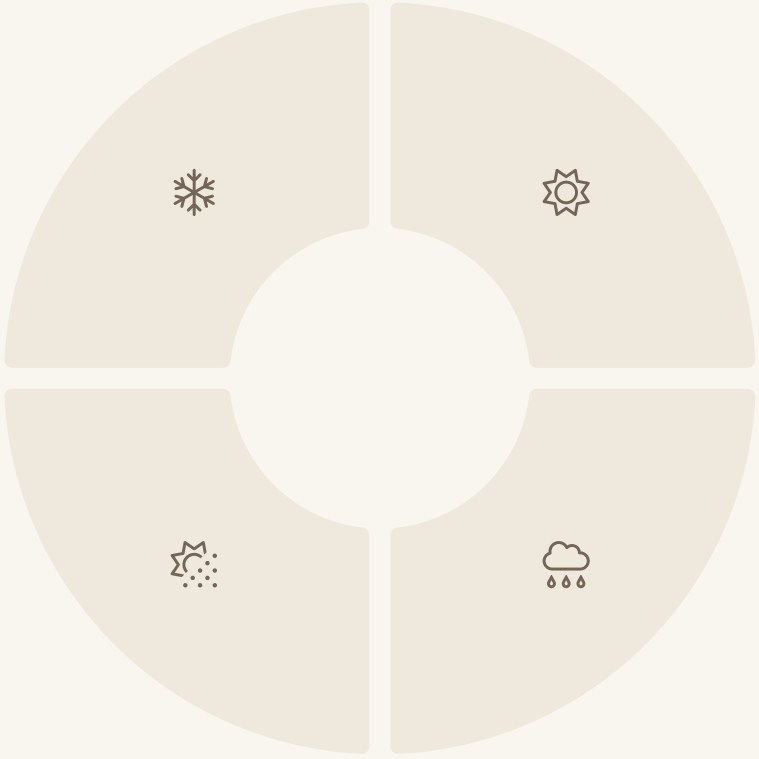
Seasonal Formulation Adaptations

Winter Formulations

- Increase oil phase to 30-40%
- Add 3-5% butters (shea, cocoa)
- Include 1-2% ceramides or cholesterol
- Use W/O emulsifiers
- Add 0.5% allantoin for barrier repair

Summer Formulations

- Reduce oil phase to 15-25%
- Use light oils (grapeseed, jojoba)
- Increase humectants (aloe, glycerin)
- Use O/W emulsifiers
- Add 0.5-1% green tea extract



Dry Environments

- Increase humectants to 5-8%
- Add 2-3% honey or propolis
- Use heavier oils (olive, avocado)
- Include occlusive layer (5% beeswax)
- Consider overnight masks

Humid Environments

- Reduce glycerin to 2% max
- Include 1-2% tapioca starch
- Add 0.5% zinc PCA
- Use gel-cream textures
- Include antimicrobial botanicals

Adjust not only for seasons but for your specific microclimate—coastal areas, mountains, and urban environments all create different skin stressors.

Environmental Protection Formulation

Antioxidant-Rich Ingredients for Environmental Defense

Modern skincare must address not just hydration but also protection from environmental stressors like pollution, blue light, and UV exposure.

Pollution Defense

- 2-5% raspberry seed oil
- 0.5-1% green tea extract
- 1-3% vitamin C derivatives

UV & Blue Light

- 2-4% red raspberry seed oil
- 1-2% carrot seed oil
- 0.5-1% astaxanthin

Barrier Reinforcement

- 3-5% ceramide complex
- 1-2% panthenol (B5)
- 2-5% oat oil or extract

⚠ Remember that natural products alone cannot provide complete sun protection. For significant UV exposure, natural skincare should complement, not replace, mineral sunscreens with zinc oxide and titanium dioxide.

For damaged skin in polluted environments, layer products: antioxidant serum first, followed by a nourishing emulsion, and sealed with a protective balm if needed.

Key Takeaways & Next Steps

What We've Learned

- The science of emulsions enables us to create products that deliver both water and oil-soluble healing ingredients
- Balms provide intensive repair through occlusion while still allowing skin to breathe when properly formulated
- Climate-responsive formulation adapts products to both environmental conditions and specific skin damage needs
- Natural ingredients can provide both healing and protection when strategically combined

Your Assignment

Create a balm or moisturizer specifically suited for:

1. Your current climate and season
2. A specific skin condition you want to address
3. Your personal texture preferences

Document your process and results, noting:

- How the texture feels during application
- Absorption rate and residual feel
- Effectiveness after 3-5 days of use
- Stability of your formulation

"Nature meets science in the textures we create."