#### Chapter 21. Sunscreen & UV Protection Using Ayurvedic Ingredients

## **1 ► UV Made Simple**

UV Band	Skin Effect	Memory Hook
UV-B (Burn)	Sun-burn, surface tanning	B = Burn
UV-A (Age)	Deeper wrinkles, pigment	A = Ageing
Visible/IR	Heat, oxidative stress	Causes dullness

**SPF** = "Sun Protection Factor" - how long you stay burn-free.

Traditional Ayur herbs add antioxidants (fight ageing) & physical scatter (tiny mineral dust reflects UV).

# 2 ► Natural SPF Heroes (Table)

Herb / Mineral	Raw SPF Value*	What Makes It Work
<b>Licorice</b> (Glycyrrhiza)	≈ 10	Glabridin absorbs UV-B
Amla	≈ 5	Vitamin-C + tannins
Lotus Petal	≈ 6	Flavonoids (kaempferol)
Turmeric (Kasturi)	≈ 8	Curcumin scavenges ROS
Red Iron Oxide	≈ 10	Physical mirror
Non-nano Zinc Oxide	15-20 (broad)	Reflects UV-A & UV-B

<sup>\*</sup>Lab data: herbal SPF measured at 2 mg/cm² film using Mansur method.

**Key fact:** Herb extracts by themselves rarely reach SPF 30; so we **pair them with zinc oxide** for safe broad-spectrum cover.

# 3 ► Formulation Blueprint (Easy Cream, SPF ≈ 25)

Phase	Ingredient	%
Oil	Coconut oil	12
	Sesame oil infused with Licorice & Lotus	10
	Emulsifying wax (BTMS)	5
Water	Aloe-Rose hydrosol	47
Actives	Non-nano Zinc Oxide (micronised)	20
	Turmeric CO <sub>2</sub> (colour-safe)	0.3
	Vitamin-E	0.5
Preservative	(Geogard 221)	1.2
pH adjust	Lactic acid	q.s. to 5.5

Steps are visualized in the flow-chart below.

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#### WHERE CLASSICAL WISDOM MEETS INTELLIGENT LEARNING

# 4 ► Step-by-Step Classroom Demo (Plain Words)

- 1. Heat oil & wax to 70 °C.
- 2. Warm water phase to 70 °C.
- 3. Blend water into oil (stick-blender).
- 4. **Cool** to 60 °C  $\rightarrow$  add zinc oxide (wear mask).
- 5. **Below 50 °C** add herbal extracts & preservative.
- 6. **Test pH** (aim 5-6); patch test.
- 7. Fill in squeeze tube; cure 24 h.

(Flow-chart repeats these in picture form for visual learners.)

### 5 ► How to Apply & How Much

Area	Amount	Reminder
Face & Neck	½ teaspoon	"Two-fingers rule"
Both Arms	1 teaspoon	Reapply after 2 h outside
Outdoor Sports	Full shot-glass (30 ml) for whole body	Water-resistant 40 min max

# 6 ► Lifestyle + Clothing = 50 % of Protection

Tip Explain like friend

Wear **loose cotton full sleeves** Cloth = zero-cost SPF 50 **11 am-3 pm** = high UVB Plan walks before or after

**Shade & Hat**UV comes top-down; brim cuts 50 %

# 7 ► Safety & FAQ

Q

"Will turmeric colour me yellow?" At 0.3 % CO2 extract - no. Patch on wrist first.

"Is zinc oxide safe for reefs?" Yes, non-nano  $\leq$  200 nm; avoid nano < 30 nm.

"Pregnancy?" All ingredients pregnancy-safe; still patch-test.

#### 8 ► Mini-Quiz (Slide Poll)

- 1. Which mineral in our cream blocks both UV-B and UV-A?
- 2. Why infuse herbs into sesame or coconut instead of water?
- 3. How often must you reapply any sunscreen?

(Answers: Zinc oxide • Oil pulls fat-soluble actives, plus longer shelf life • Every 2 h outdoors or after sweat.)

#### \*\*Key Take-Aways

- Herbal SPF boosters (licorice, lotus, turmeric) + zinc oxide = natural broad-spectrum.
- Keep pH 5-6, use correct 2 mg/cm<sup>2</sup> thickness, reapply.
- Clothes, hats & timing are half the game teach clients "cover + cream + clock."

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Mantra: "Layer nature's filter on skin and sky's fire turns gentle."

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