



## 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>B = Burn</b>
UV-A (Age)	Deeper wrinkles, pigment	<b>A = Ageing</b>
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
Licorice ( <i>Glycyrrhiza</i> )	≈ 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

\*Lab data: herbal SPF measured at 2 mg/cm<sup>2</sup> 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.



## 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 → 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 <b>loose cotton full sleeves</b>	Cloth = zero-cost SPF 50
<b>11 am–3 pm</b> = high UVB	Plan walks before or after
<b>Shade &amp; Hat</b>	UV comes top-down; brim cuts 50 %

## 7 ▶ Safety & FAQ

Q	A
"Will turmeric colour me yellow?"	At 0.3 % CO <sub>2</sub> extract – no. Patch on wrist first.
"Is zinc oxide safe for reefs?"	Yes, non-nano ≤ 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."



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

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