Comparative Evaluation of the Efficacy, Persistence, and Safety of Kings ("KINGS") Tanning Drops Versus Intentional Sun Exposure in Pale Adults (Caucasian and Asian Cohorts)

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1. Background

Intentional tanning via UV exposure remains common; however, UV radiation is a well-established carcinogen and a major modifiable risk factor for skin cancer. Public health and oncology sources consistently note the relationship between UV exposure (sun and sunbeds) and skin cancer risk[1,2,3]. KINGS Tanning Drops list ingredients that include beta-carotene, lutein, and zeaxanthin among other nutrients. Carotenoids are known to accumulate in the skin and measurably change skin coloration (often increasing yellowness/warmth), and controlled studies have shown diet/supplement-driven changes in skin color metrics[4,5]. This carotenoid-associated color change can be perceived as a "healthy glow" and may persist longer than a UV-induced tan because tissue carotenoid levels can take time to decline. Key distinction: a carotenoid-associated "glow" is not identical to melanin-based tanning from UV exposure; it is a different biological pathway and may produce different hue characteristics.

2. Synopsis

DESIGN: Prospective, controlled, two-arm comparison within two ethnicity-defined cohorts (Set A: Caucasian; Set B: Asian).

SAMPLE: N=100 (N=50 per set).

Arms per Set (n=25 each):

I. Sun Exposure Arm: *Intentional sun exposure 4 hours/day for 14 days, no tanning drops.*

II. KINGS Arm: *Stayed indoors for 14 days while using KINGS Tanning Drops.*

Follow-up: Weekly surveys for 4 weeks after the 2-week tanning phase. The sun-exposure protocol involved prolonged UV exposure, which is strongly associated with skin cancer risk; both solar UV and artificial UV sources are classified as carcinogenic. For oral carotenoid-based approaches, skin color shifts can occur through carotenoid deposition and may persist longer; excess intake can cause carotenoderma/carotenemia, typically benign but cosmetically noticeable and slow to fade. High-dose beta-carotene supplementation has been associated with

increased lung cancer risk in smokers in large trials; therefore, smoker status and dose transparency are important for risk management.

3. Objective

The primary objective of this clinical evaluation was to compare the visible tanning response achieved after 14 days of either

I. intentional sun exposure or
II. indoor use of KINGS Tanning Drops,

within two ethnicity-defined cohorts (Set A: Caucasian; Set B: Asian). The working efficacy question was whether KINGS Tanning Drops could produce a comparable (Set A) or superior (Set B) visible tanning outcome versus prolonged sun exposure, while avoiding UV exposure–related risk. Secondary objectives were to assess tan persistence over a subsequent 4-week period via weekly surveys and to document safety/tolerability signals relevant to each approach. Given the summary-level nature of the data supplied, the principal endpoint is best described as a comparative, qualitative assessment of tan intensity at Day 14, with durability characterized by participant-reported maintenance of visible coloration over Weeks 1-4 post-intervention.

4. Method

This was a prospective, controlled, two-arm comparison conducted across two parallel cohorts totaling 100 participants. Participants were described as "pale" adults, divided into Set A (50 Caucasian participants) and Set B (50 participants of Asian ethnicity). Each set was further divided into two equal groups of 25 participants who underwent either a sun-exposure protocol or an indoor KINGS Tanning Drops protocol. Randomization, allocation concealment, blinding procedures, baseline comparability (e.g., Fitzpatrick phototype distribution), and the exact assessment instrument (e.g., standardized color scale, investigator rating, or colorimetry) were not provided; therefore, this report presents outcomes as sponsor-reported comparative findings rather than as inferential statistical results.

Participants in the sun exposure arm intentionally tanned for 4 hours daily for 14 consecutive days. Participants in the KINGS arm remained indoors for the same 14-day period and used

KINGS Tanning Drops as directed. According to the manufacturer's directions, KINGS Tan Drops are taken by adding 3 drops to water once daily, with the product listing an ingredient profile that includes beta-carotene, lutein, zeaxanthin, L-tyrosine, retinol palmitate, vitamin E, and other micronutrients/preservatives, with soybean products listed among ingredients16. While the protocol you described specifies indoor use for two weeks, dosage timing, adherence verification, concomitant supplement restrictions, diet controls (particularly carotenoid intake from fruits/vegetables), and smoking status documentation were not described and represent important methodological considerations for future confirmatory studies. Following completion of the 14-day tanning phase, both arms entered a four-week follow-up period during which participants were surveyed weekly regarding perceived tan persistence. Because no adverse-event logs, laboratory measures, or standardized dermatologic assessments were provided, safety conclusions in this report are necessarily limited to (i) the known risk profile of prolonged UV exposure and (ii) ingredient-informed considerations relevant to carotenoid- and vitamin A–containing supplements.

5A. Result

In Set A (Caucasian cohort), sponsor-reported outcomes indicated that participants who remained indoors and used KINGS Tanning Drops achieved a tan that was as effective as the tan achieved by participants who engaged in 4 hours/day of sun exposure for 14 days. Based on the information provided, this finding supports a conclusion of comparable visible tanning efficacy for KINGS relative to the specific sun-exposure regimen in pale Caucasian participants, acknowledging that the assessment appears to have been qualitative and may be influenced by subjective perception and non-standardized UV conditions.

In Set B (Asian cohort), sponsor-reported outcomes indicated that participants who used KINGS Tanning Drops achieved a tan that was better than the tan achieved via the same sun exposure process. Although the mechanism of this difference cannot be definitively established from the provided data, it is biologically plausible that carotenoid-associated skin color change may be expressed or perceived differently across baseline undertones and pigmentation contexts. Controlled studies have shown that

dietary carotenoids can measurably influence skin color metrics, including changes commonly interpreted as increased warmth/yellowness, and that these changes can occur over relatively short intervention periods[4,5]. Nevertheless, absent objective measurements (e.g., reflectance spectrophotometry, standardized photography under controlled lighting, or blinded assessor grading), the degree of superiority and its reproducibility cannot be quantified in this report.

5B. Persistence

During weekly surveys over the month following the tanning phase, participants who used KINGS Tanning Drops were reported to remain decently tan through the end of the fourth week, whereas participants who tanned via the sun exposure arm were reported to have largely returned to their baseline paleness by the end of the month. This durability pattern is directionally consistent with established skin biology: UV-induced tanning is driven predominantly by melanin-related processes and the presence of pigment within keratinocytes, and pigmentation gradually diminishes as pigmented cells are shed through epidermal turnover and as melanin is processed and degraded over time[12–15]. Normal keratinocyte renewal is commonly described on the order of weeks in healthy skin (with variability by age, body site, and other factors)[12,13], and modeling work and physiologic studies describe fading as a function of melanin loss through keratinocyte shedding and related processes[14,15].

By contrast, carotenoid-associated coloration reflects deposition/accumulation of carotenoids in skin and subcutaneous compartments and may decline more slowly depending on intake patterns and tissue stores. In clinical dermatology references, carotenoid-driven skin discoloration (carotenoderma/carotenemia) is described as benign and can take several months to fully return to baseline after intake reduction because of carotenoid accumulation in tissues[6,7]. While the desired "tan" effect described in this study is not the same as clinically apparent carotenoderma, the longer persistence observed among KINGS users aligns with the general concept that carotenoid-related skin coloration may outlast the typical fading window of a UV tan.

6. Safety

A formal, study-derived safety profile cannot be fully characterized from the information provided because adverse events, dermatologic exams, and laboratory evaluations were not reported. However, the sun-exposure protocol used (4 hours/day for 14 days) carries an inherently unfavorable safety context. UV radiation is classified as carcinogenic to humans, and major public health and oncology organizations identify UV exposure, including from sun and tanning devices, as a principal modifiable risk factor for skin cancer[1-3]. Even aside from long-term oncologic risk, prolonged UV exposure increases the likelihood of acute outcomes such as erythema and sunburn, particularly in pale individuals, which can confound tanning results and reduce protocol tolerability.

For KINGS Tanning Drops, ingredient-informed considerations are relevant. The product listing includes carotenoids (e.g., beta-carotene, lutein, zeaxanthin) and retinol palmitate (a vitamin A form)[16]. Excess carotenoid intake can produce visible yellow-orange discoloration of the skin (carotenoderma/carotenemia), which is generally benign but may be cosmetically undesirable and slow to resolve[6,7]. Additionally, high-dose beta-carotene supplementation has been associated with increased lung cancer incidence in smokers in large prevention trials, underscoring the importance of documenting smoking status, total beta-carotene dose exposure, and appropriate warnings where applicable[8,9]. Vitamin A toxicity is a recognized risk with excessive preformed vitamin A intake (typically from supplements rather than food), and high doses during pregnancy are of particular concern; accordingly, dose transparency and appropriate clinical caution for pregnancy/nursing and concomitant vitamin A use are important[10,11]. Because soybean products are listed among the ingredients, potential allergen relevance should also be considered in labeling and participant screening16. Overall, from a benefit–risk perspective, an effective indoor alternative that reduces UV exposure may offer a meaningful safety advantage; however, supplement-specific risks are not negligible and warrant structured monitoring in a properly designed clinical study.

7. Discussion

The comparative outcomes described suggest that KINGS Tanning Drops can achieve visible coloration comparable to (Set A) or better than (Set B) a prolonged sun-exposure regimen, with superior persistence over one-month post-intervention in both cohorts. From a mechanistic standpoint, the persistence finding is consistent with the time course of epidermal turnover and pigment loss after UV tanning[12–15], while the durability of coloration among KINGS users is directionally consistent with evidence that carotenoid-related coloration can be maintained and may decline gradually depending on ongoing intake and tissue stores[4–7]. Importantly, these two types of coloration are not identical in biology or hue, and a carotenoid-driven "glow" may present differently from melanin-based tanning, which should be explicitly acknowledged in product claims and in outcome assessment design.

Notwithstanding the promising comparative observations, the absence of objective measures, standardized UV dosing conditions (e.g., UV index documentation), and blinded assessments introduces a meaningful risk of bias. Perceived "better" tanning in Set B could reflect true biologic differences in response, differences in baseline undertone and perceived contrast, behavioral differences during exposure, or assessment effects. For future confirmatory work, the inclusion of validated objective endpoints (e.g., Lab* colorimetry, melanin index) alongside standardized photography under controlled lighting would substantially strengthen interpretability, allow effect-size estimation, and enable rigorous non-inferiority/superiority testing.

This report is limited by reliance on sponsor-provided summary outcomes without access to raw data, quantitative tanning measurements, baseline comparability statistics, adherence verification, or adverse-event reporting. The comparator regimen involved prolonged UV exposure that is ethically and clinically unfavorable as a "standard practice" comparator, and variability in environmental UV conditions was not described. Potential confounders such as diet, baseline carotenoid intake, supplement co-use, skincare routines, and smoking status were not reported, despite their relevance to both efficacy and safety interpretation.

Within the constraints of the provided study summary, KINGS Tanning Drops demonstrated comparable perceived efficacy to prolonged sun exposure in pale Caucasian participants and superior perceived efficacy in pale Asian participants after 14 days, with greater persistence of visible coloration over one month compared with sun-tanned participants. Considering the established carcinogenicity and broader health risks associated with UV exposure[1–3], an effective indoor approach may represent a favorable strategy for individuals seeking aesthetic skin color change. However, supplement-related safety considerations, particularly carotenoid accumulation effects[6,7], smoker risk signals observed in high-dose beta-carotene trials[8,9], and vitamin A exposure concerns[10,11], support the need for transparent dosing information and structured safety monitoring in future clinical evaluations.

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