PALM-BASED ANTI-CRACKED HEEL CREAM

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he skin is a barrier between the body and the environment, and any stress imposed by the environment can affect it. Cracked heels are a common foot problem, generally occurring in hot tropical climates, but also in summer and winter in the temperate countries. Heels crack from excessive water loss from the skin, causing it to dry out (*Figures 1* and 2). The corneous layer then prematurely flakes off and cracks develop on the skin surface. For prevention, it is necessary to hydrate the skin when the fissures will then slowly heal.



Figure 1. Cracks on the right heel.



Figure 2. Cracks under the heel.

PALM-BASED ANTI-CRACKED HEEL CREAM

A palm-based anti-cracked heel cream has been developed by MPOB to enhance water retention by the skin to increase its hydration. It is produced by incorporating higher humectants in the anticracked heel cream. Humectants are materials that attract water and thus prevent transepidermal water loss to keep the skin moist. Glycerin, propylene glycol, sorbitol, aloe vera extract, honey, cactus extract and palm-based polyhydric alcohols can be incorporated to enhance the moisturizing potential, while tocotrienols, tocopherols and O reduce possible co-enzyme any skin inflammation. This palm-based cream is able to improve the skin hydration and reduce its roughness in a week.

PROPERTIES OF PALM-BASED ANTI-CRACKED HEEL CREAM

- The cream is stable at room temperature, up to 45°C, and even after several freeze-thaw cycles;
- The cream has a shear thinning property, or pseudoplastic flow. A pseudoplastic material is a non-Newtonian fluid which apparent viscosity falls as the applied shear rate increases;
- The cream, with palm polyhydric alcohols, has a higher viscosity, yield stress, thixotropic area and longer viscoelastic region than a control cream. A cream with thixotropic property takes a finite time to reach equilibrium in viscosity when at constant shear rate; and
- The cream also has very low potential irritability on the ocular or dermal membrane.

EFFICACY EVALUATION

The product was evaluated on 20 subjects with cracked heels. The skin hydration was compared between the areas treated and not treated with the cream (*Figure 3*). The treated skin showed a 20% - 25% reduction in roughness after seven days (*Figure 4*).





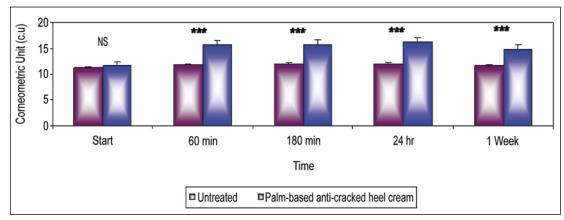


Figure 3. Skin hydration effect of applying anti-cracked heel cream on skin for up to one week of treatment. Note: NS - not significant; *** Significant (P < 0.001).

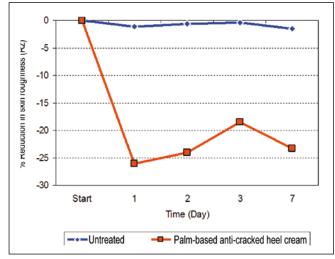


Figure 4. Reduction in skin roughness after application of palm-based anti-cracked heel cream.

Image analysis of the untreated (*Figure 5a*) and treated (*Figure 5b*) skin showed significantly fewer fissures in the latter. Improvement was noticeable after only one week of treatment, with fewer fissures and a smoother feel.

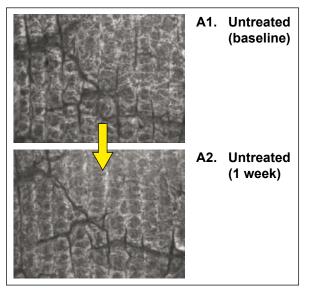


Figure 5a. Cracked skin of untreated heel (magnification: 30X).

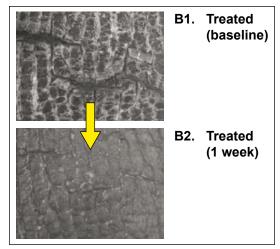


Figure 5b. Cracked skin of heel after treatment (magnification: 30X).

ECONOMIC ANALYSIS

Foot care products are niche products, usually sold over-the-counter. There are very few brands of anticracked heel products locally and thus the potential for sales is high. The return of investment is about 25% with four years as the payback period.

CONCLUSION

The palm-based anti-cracked heel cream with enhanced moisturizing ingredients hydrated the skin and noticeably reduced its roughness within a week.

