

PALM-BASED BABY SHAMPOO AND LOTION

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MPOB TT No. 235a - Palm-based Baby Shampoo
MPOB TT No. 235b - Palm-based Baby Lotion

The development of baby care products has always presented the cosmetic formulator with a significant challenge, principally because of the specific requirements. Baby care toiletries, which are necessarily designed to keep the infant clean, comfortable and healthy, must be formulated with safety requirements in mind (Justin, 1995). One aspect of safety that concerns consumers can be described as *mildness*, which is the product's ability to perform its intended function without irritating the skin or eyes (John, 1999).

When selecting ingredients for formulations, many factors must be considered because the skin surface area to weight ratio is significantly higher in babies than in adults (Randy and Perry, 1999). Generally, dye stuff and fragrance levels should be kept as low as possible, and preservative levels should be kept to a minimum, consistent with ensuring adequate preservation to negate the risk of contamination of the product or infection of the user (Justin, 1995).

The simplest way to formulate a mild baby product is to reduce or eliminate the level of irritating ingredients. Another strategy for reducing irritation is using more mild ingredients like palm-based substitutes. Ideally, these ingredients should function in the same manner as the ones they replace (John, 1999).

PALM BASED BABY SHAMPOO

Detergency

This palm-based baby shampoo (*Figure 1*) is formulated with high percentage of palm-based materials and mild surfactants. The ability of the formulation to remove soil was evaluated using silk soiled with sebum at 0.5% concentration, water hardness 50 ppm and 350 ppm at room temperature. The results indicated that cleansing power of all palm-based shampoo formulae is comparable or better than the commercial baby shampoos (*Figure 2*).

Foaming

Foaming test was carried out at 0.1% concentration of those formulated palm-based



Figure 1. Palm-based baby shampoo.

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baby shampoos. The results showed that the performances of all palm-based baby shampoo formulae are comparable to the commercial baby shampoos (Figure 3).

***In vitro* IRRITATION ASSAY SYSTEM**

The developed formulae were evaluated against commercial baby shampoo (Commercial 3) with the Irritation Assay System to predict their potential to ocular and dermal irritations. Commercial 3 was chosen as a comparison because the surfactant used is quite similar with the developed formulae.

Dermal Irritation Assay results indicated that all the formulated baby shampoos and a

commercial baby shampoo were classified as non-irritant (Rosnah, 2002). Dermal Irritation Assay results as indicated in Figure 4.

For Ocular Irritation Assay test, all those shampoo formulae and the commercial product, were classified as mild irritant (Rosnah, 2002). The Ocular Irritation Assay results are as indicated in Figure 5.

PALM-BASED BABY LOTION

This product is formulated with 97.2% palm-based materials (Figure 6) and enriched with botanical extract to protect the baby's skin against redness and irritations. Evaluation by *in vitro* irritation assay for dermal irritation found

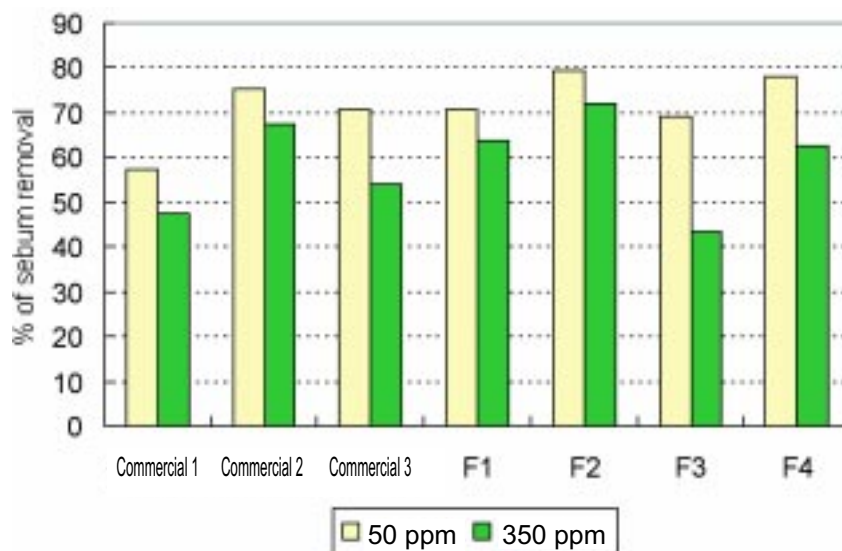


Figure 2. Detergency test of baby shampoo (0.5% w/v) using silk (70D) at RT.

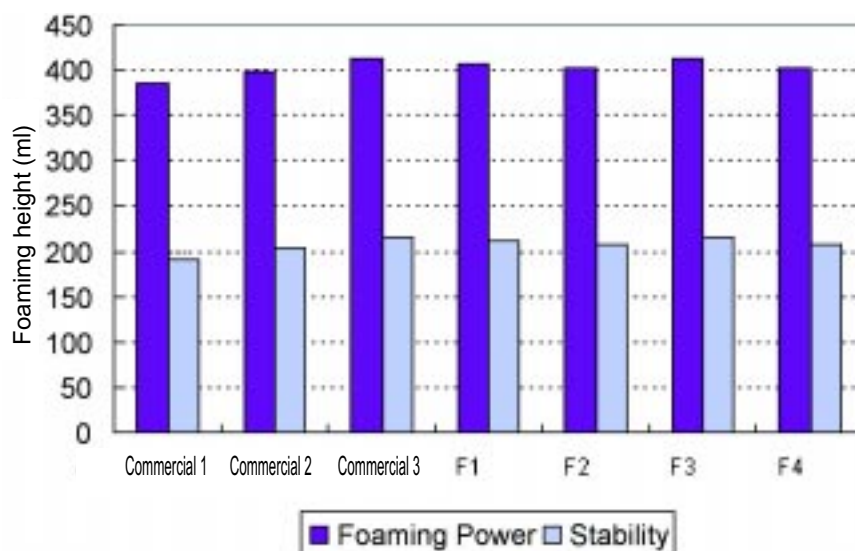


Figure 3. Foaming test of baby shampoo (0.1% concentration) at RT.

that the commercial and formulated product were classified as non-irritant with zero Human Irritancy Equivalent (HIE) score (Table 1).

CONCLUSION

- a) 97.5% palm-based materials were used in the baby shampoo formulation.
- b) 97.2% palm-based materials were used in the baby lotion formulation.
- c) Based on the results, it indicates that palm-based baby shampoo and lotion were



Figure 6. Palm-based baby lotion.

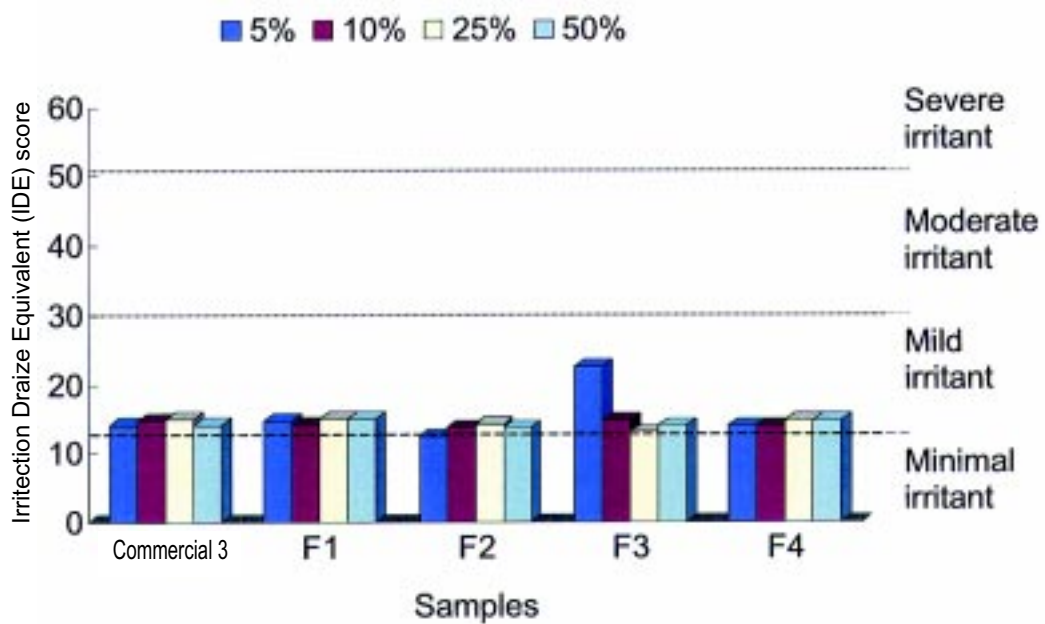


Figure 4. In vitro Dermal Irritation Assay System of baby shampoo.

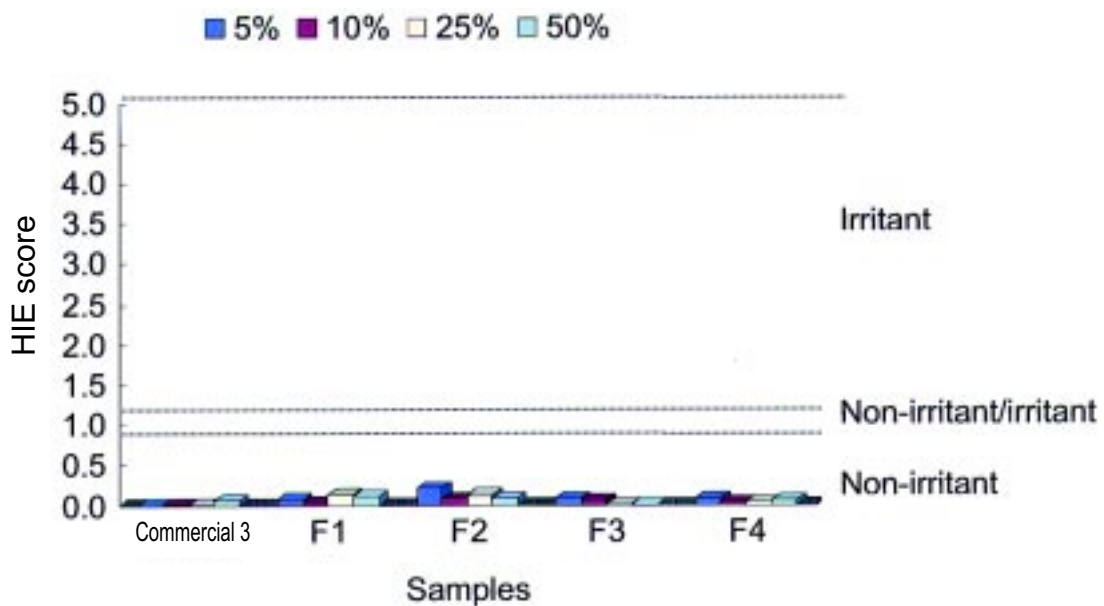


Figure 5. In vitro Ocular Irritation Assay System of baby shampoo.

TABLE 1. *In vitro* DERMAL IRRITATION ASSAY SYSTEM OF BABY LOTION

Dose (μ l)	HIE Score		
	Comm 1	L1	L2
50	0.00	0.00	0.00
75	0.00	0.00	0.00
100	0.00	0.00	0.00
125	0.00	0.00	0.00
Predicted Dermal Irritancy Classification	Non Irritant	Non Irritant	Non Irritant

classified as mild to the eyes and non-irritant to the skin and comparable to the commercial products.

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