

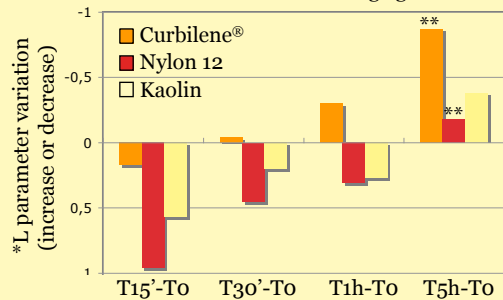


Curbilene®

Matting agent

Proven efficacy on humans

Effect of Curbilene® of skin lightness compared to traditional matting agents



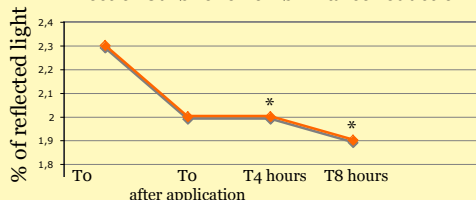
*L parameter decrease (upper part of the chart) refers to the positive matting effect of the formulation

The long lasting effect of a make up foundation containing Curbilene®¹ at 2% has been evaluated on 24 human volunteers and compared to two positive standards for matting efficacy as Kaolin (2%) or Nylon 12 (2%).² Serial colorimetric measurements were taken after 15, 30 minutes, 1 and 5 hours from product application. Curbilene® significantly ($p < 0.01$) decreased skin lightness (*L parameter) after 5 hours from product application (-0.87 colorimetric values), indicating a long lasting effect of the matting appearance of the formulation.

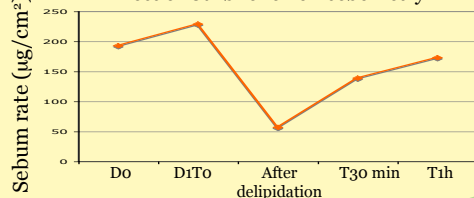
After an initial increase in skin lightness due to product application, the comparison with the two positive references indicated a superior performance for Curbilene®, that was also statistically significant at 5 hours ($p < 0.01$).

The effect of a 2% Curbilene® containing emulsion on eventual modification of sebum composition was evaluated on four volunteers by collecting sebum samples after product application.³ Sebum was collected before the application and 4 and 8 hours after the application; sebum quality was evaluated by GC-MS. Results showed that sebum composition was not affected by product application, thus defining a totally safe profile of the ingredient without modifications in the sebum composition.

Effect of Curbilene® on brilliance reduction



Effect of Curbilene® on sebometry



Skin mattiness is determined by measuring brilliance, being mattiness and brilliance two opposite parameters that vary in a proportional way. Brilliance is defined by the way a surface reflects a luminous incidental ray. Skin is in a weak reflective domain ranging 1-12% of the incidental light.

The immediate matting effect of Curbilene® was clinically evaluated on 10 volunteers⁴ (each being her own control) who applied (standardized application of $2\mu\text{l}/\text{cm}^2$) a 2% Curbilene® containing emulsion on forehead (a typically glossy area). Mean brilliance (measured by Brilliancemeter®, Minolta Multi Gloss 268) decreased by 11%, 12% and 14% immediately after application, after 4 and 8 hours respectively. All variations were statistically significant ($p < 0.05$).

Seboregulation was also evaluated⁴ by measuring on the same volunteers sebum rate on the chin before application, after two standardized applications of the product, immediately after delipidation and 30 and 60 minutes after delipidation.

Mechanism of action

Curbilene® does not affect skin hormone metabolism, being unable to interfere with the reductive activity of testosterone and its conversion into DHT.⁵ Its matting activity is apparently the result of peculiar optical properties, with no effect on skin physiology. Thus, while being unable to interfere with sebum secretion, Curbilene® can neutralize the brilliance and viscosity of the sebum, overall masking the visual and sensory effects of its production.⁶ Δ^7 -sterols and squalene are characteristic of this extract.

1. US Patent 5,547,673. - 2. Matting efficacy by skin colorimetric measures, ISPE report 108/01/01-2-3, June 2001. - 3. Di Pierro F., Guglielmini G., Cristoni A., "Evaluation ex vivo on human subjects of the sebum composition before and after a product application", Personal Care Ingredients Asia, Shanghai 2002. - 4. Evaluation, in vivo on human subjects, of the matting effect of the product Curbilene® - evaluation of its effect on seboregulation, DermScan report 99169, October 1998. - 5. Effects of the compound Curbilene on the metabolism of testosterone in skinethic reconstructed epidermis, Bioalternatives report AD991101A, January 2000. - 6. Evaluation, in vitro, of the effect of Curbilene® on sebum viscosity and glossiness, DermScan report 99974, April 2000.



