



An Assessment of Daikon Seed Extract's Effect on Hair vs. Other Common Raw Materials

Background:

Daikon Seed Extract (DSE) is a fully-refined triglyceride derived from the seeds of *Raphanus sativus* grown in the Willamette Valley of Oregon. Daikon Seed Extract imparts a delicate skin feel and emolliency, and its aesthetics differ qualitatively from other botanicals.

Objective:

To evaluate the different effects on hair between DSE and a variety of other raw materials.

Test Products:

Daikon Seed Extract, olive oil, clear jojoba oil, 350 cps dimethicone and 1000 cps dimethicone.

Hair Tresses:

The hair tresses weighed approximately 3 g and measured 8" in length and 1" in width. Depending on the test performed, tresses were chemically damaged through different means. Hair used for shine and dry combing was bleached one time. Hair used for repeated grooming was bleached three times.

Treatment:

The hair tresses were initially cleansed with a non-conditioning shampoo (Suave Clarifying Shampoo) and allowed to dry overnight under controlled humidity (60%). Test products were applied to the hair at a dosage of 0.25 mL per 3 g tress and massaged thoroughly. After application, the hair was left overnight under controlled humidity (60%) before testing.

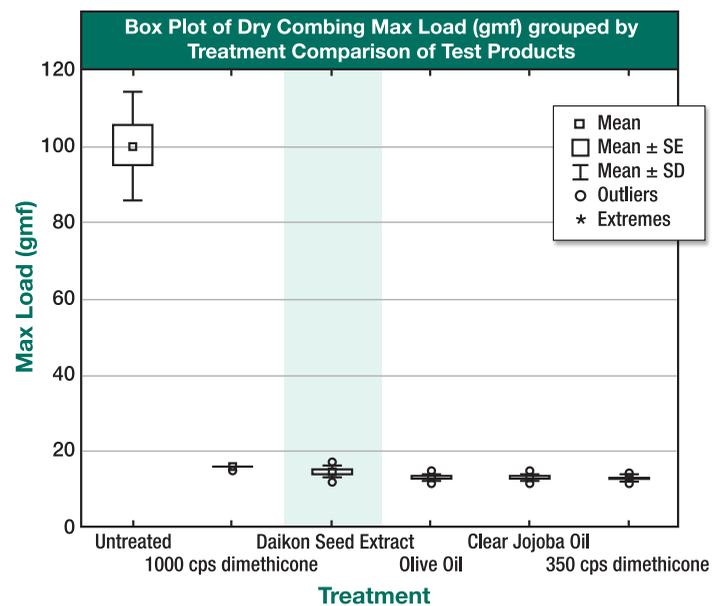
Instrument:

- **Dry Combing** - Instron tensile tester to evaluate frictional forces while a hair tress pulled through a comb
- **Repeated Grooming** - Custom-built automated grooming device
- **Technical Shine** - Samba device by Bossa Nova

Methodology:

- **Dry Combing** - Combing experiments were performed in the dry state after overnight equilibration at 60% RH. Eight combing strokes were performed per tress, while eight replicate hair tresses were used per sample to ensure statistical relevance.
- **Repeated Grooming** - Tresses were repeatedly brushed 10,000 times with broken fibers being evaluated every 1,000 strokes. Ten replicate hair tresses were used for each sample to ensure statistical relevance.
- **Technical Shine** - Eight tresses per sample were evaluated to ensure statistical relevance.

Daikon Seed Extract



Statistical Analysis:

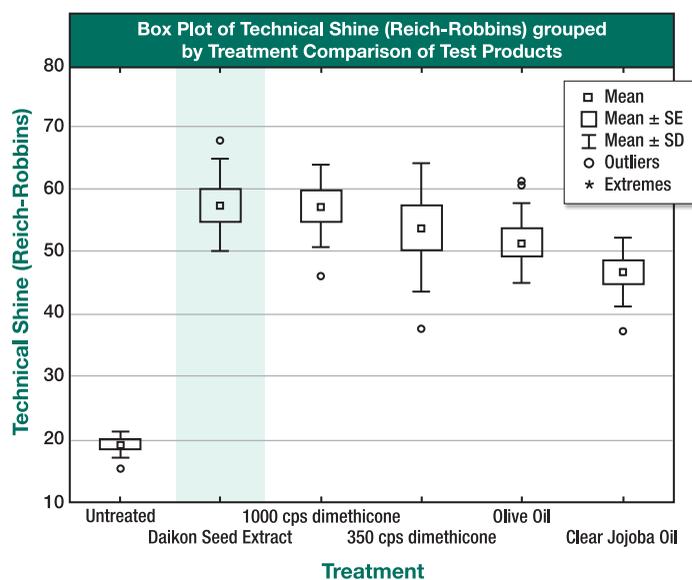
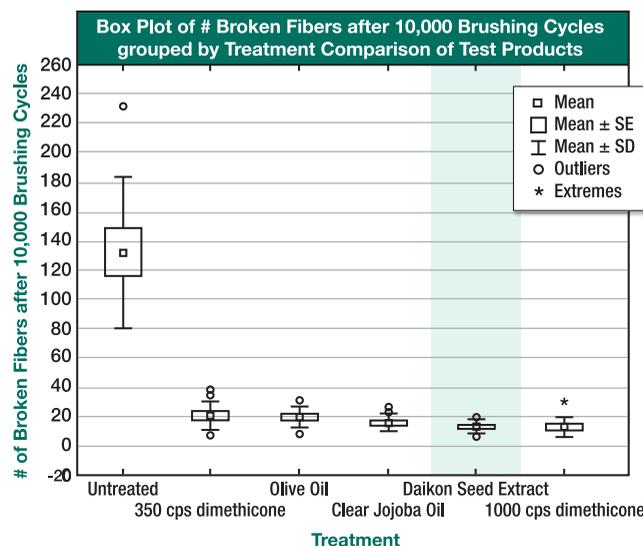
Statistics were performed on data sets from all 3 tests using the student's t-test at the 95% confidence level. Treatments were compared to the untreated baseline and against other treatments.

Results:

- **Dry Combing** - Although the magnitude of the differences are not large, olive oil, clear jojoba, and 350 cps dimethicone provide significantly lower combing forces compared to Daikon Seed Extract and 1000 cps dimethicone, which provided the highest combing force among the treated samples.
- **Repeated Grooming** - Daikon Seed Extract, clear jojoba, and 1000 cps dimethicone reduced breakage compared to the untreated control to a greater degree than olive oil and 350 cps dimethicone.
- **Technical Shine** - Daikon Seed Extract tested highest for shine and was significantly different than clear jojoba. There was no significant difference between Daikon Seed Extract, both grades of dimethicone, and olive oil. Clear jojoba provided the least amount of shine of all test materials. A further ANOVA analysis was run which confirmed the statistical difference between Daikon Seed Extract.

Conclusions:

- **Dry Combing** – For dry combing, lower forces indicate improvements in management of the hair. The results clearly show that each of the test products provide a significant improvement over untreated hair. Although the magnitude of the differences are not large, olive oil, clear jojoba, and 350 cps dimethicone provide significantly lower combing forces compared to Daikon Seed Extract and 1000 cps dimethicone, which provided the highest combing force among the treated samples.
- **Repeated Grooming** - With repeated grooming, a lower number of broken fibers indicated an improvement provided by the treatment. Daikon Seed Extract, clear jojoba, and 1000 cps dimethicone reduced breakage compared to the untreated control to a greater degree than olive oil and 350 cps dimethicone.
- **Technical Shine** - Daikon Seed Extract has the highest value for shine, although there was no significant difference compared to both dimethicones and olive oil. Clear jojoba provided the least amount of shine of the treated samples and was statistically different than Daikon Seed Extract.



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