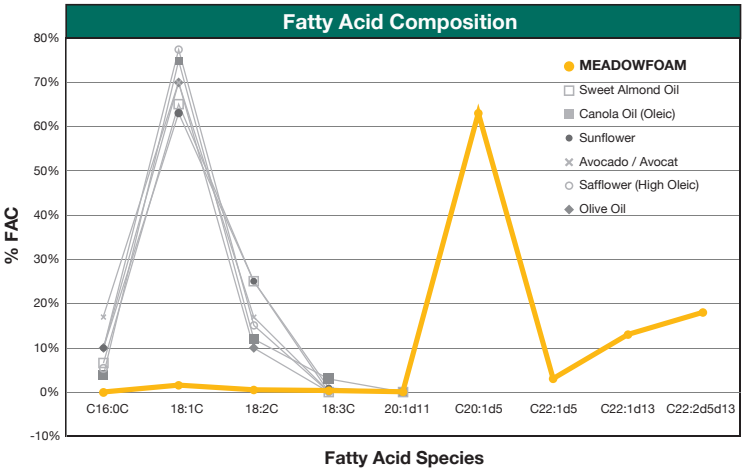
The Original Producers of *Meadowfoam Seed Oil*™

Natural Plant Products

Extend the Shelf Life of Popular Natural Oils by Blending with Meadowfoam Seed Oil

All oils, fats and waxes degrade over time due to oxidation. Natural oils have an inherent resistance to oxidation that depends on chemical structure, antioxidant content and the processing and storage conditions to which the oils have been exposed.

Minimizing or slowing down the rate at which oils in personal care products oxidize effectively extends their shelf stability, an important factor to consider when formulating products including natural emollients.



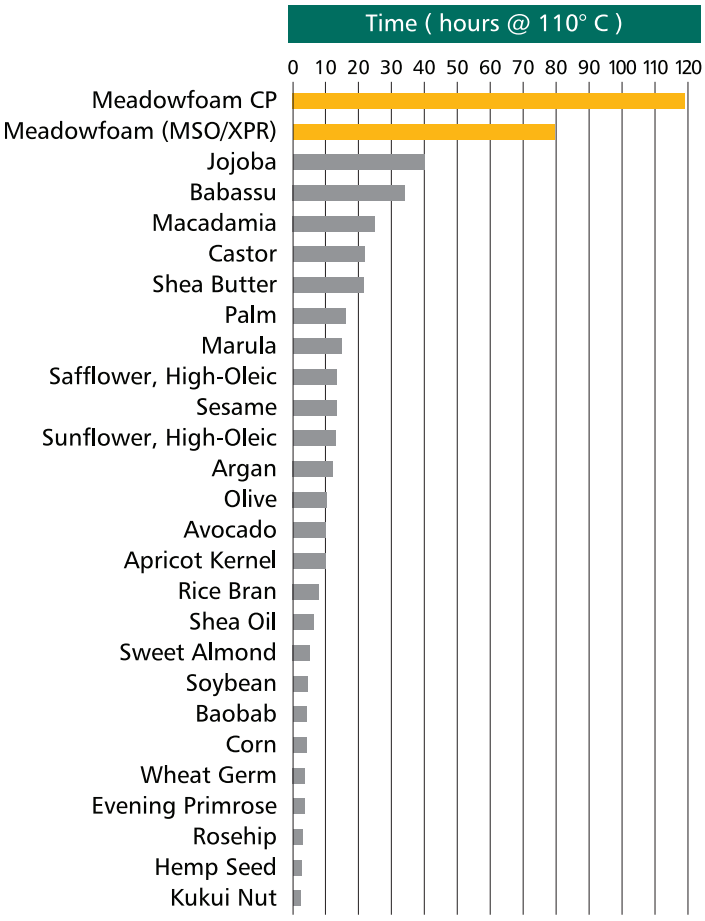


Figure 1. Comparative OSI Values of Natural Oils

Background:

Meadowfoam Seed Oil is one of the most stable lipids known. This is due to the unique chemical structure of the fatty acids contained within meadowfoam triglycerides. These fatty acids feature unsaturations at the fifth carbon (Δ5) as opposed to the more common Δ9 and Δ12 unsaturations found in fatty acids such as oleic and linoleic. A study by Kaneniwa et al. (1988) found "that the 5-olefinic and dienoic acids are more stable to autoxidation than the normal monoenoic and dienoic acids, respectively." The presence of these unique and durable fatty acids combined with a near absence of oxidatively susceptible polyunsaturated fatty acids combine to grant Meadowfoam Seed Oil this superior product benefit.

Objective:

To evaluate the extent to which the oxidative stability of a variety of popular natural oils would be increased when blended with Meadowfoam Seed Oil.

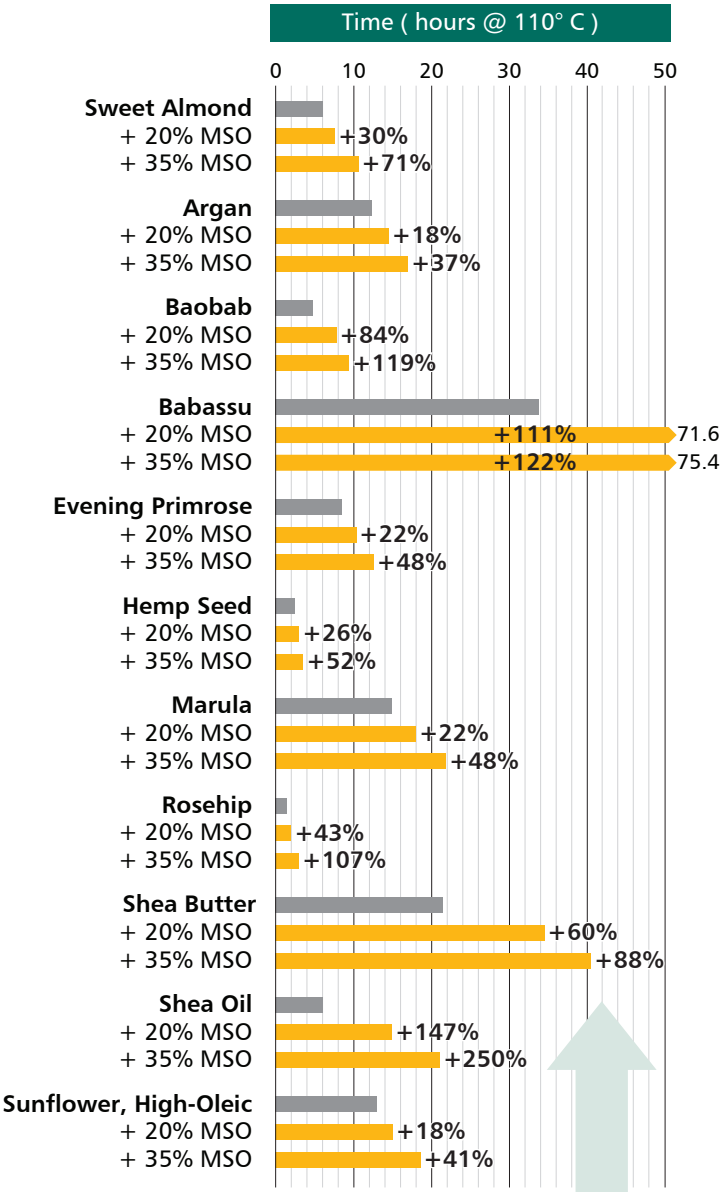


Figure 2. Comparative OSI Values of Oils/Oil Blends

The above chart illustrates how blending different proportions of Meadowfoam Seed Oil with various popular natural oils extends their respective oxidative stability.

Methodology:

The Oil Stability Index is an instrumental measurement described in Official Method 12b-92 of the American Oil Chemists Society (AOCS) that determines the relative resistance of fat and oil samples to oxidation. During the analysis, a sample of oil is exposed to a steady stream of air at a specific temperature. Subtle changes resulting from the degradation of the oil are captured by the instrument which plots the degradation of the oil over time. The OSI value is the number of hours required for the oil's resistance to degradation to be overcome.

OSI analyses were conducted on a variety of oils used in the cosmetic industry (Figure 1) as well as on blends of select oils with Meadowfoam Seed Oil.

Results:

The results confirm Meadowfoam's superior stability, but more importantly, show how Meadowfoam can be used to increase the stability of other oils (Figure 2).

Conclusions:

Effective use of oil blends incorporating Meadowfoam Seed Oil can result in increased stability and improved formulations showcasing the unique benefits of a range of natural oils.

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