品鸿生物科技
Pinhon Biotechnology

TECHNICAL DATA SHEET

PINHONBIO® Oat Kernel Extract

Water-soluble oat kernel extract powder for cosmetic formulations. It contains naturally occurring avenanthramides and is supplied on a maltodextrin carrier. The finished powder contains at least 205 mg/kg of avenanthramides A, B and C combined.

INCI names	Maltodextrin, Avena Sativa (Oat) Kernel Extract
EU INCI names	Maltodextrin, Avena Sativa Kernel Extract
Botanical source and part	Avena sativa L., kernel
Extraction solvents	Ethanol and water

Quality specifications

Parameter	Specification
Total avenanthramides A + B + C (HPLC)	≥205 ppm (≥0.0205% w/w)
Identification (TLC)	Consistent chromatographic profile
Appearance and odour	Off-white powder with a characteristic odour
Water solubility	Soluble in water
Particle size	98% passes an 80-mesh sieve
Residue on ignition	≤5.0%
Moisture	≤8.0%
Arsenic / lead	As ≤2.0 mg/kg and Pb ≤2.0 mg/kg
Mercury / cadmium	Hg ≤0.3 mg/kg and Cd ≤1.0 mg/kg
Total plate count	≤1,000 CFU/g
Yeasts and moulds	≤100 CFU/g (combined)
Escherichia coli	Not detected
Salmonella spp.	Not detected

Identity of the three HPLC markers

Marker	AF code	Alternate name	Hydroxycinnamoyl group
Avenanthramide A	AF-1	2p	p-Coumaroyl
Avenanthramide B	AF-2	2f	Feruloyl
Avenanthramide C	AF-6	2c	Caffeoyl

All three are amides of 5-hydroxyanthranilic acid. The release specification of ≥205 ppm applies to their combined mass in the powder as supplied, including the carrier. Individual proportions may vary by lot.

Applications in cosmetic formulation

The water-soluble grade can be evaluated in aqueous serums, gels and the water phase of emulsions. Maltodextrin carries the oat extract in dry powder form. Include both ingredients in the raw-material composition record.

Research context Oat avenanthramides are phenolic amides studied for skin-soothing applications. Sur and colleagues observed reduced interleukin-8 release in stimulated keratinocytes exposed to oat avenanthramides. The study provides background on the marker compounds. Finished-formula performance depends on the base and the level of active material delivered.

Calculating the avenanthramide contribution

Multiply the powder assay in ppm by the powder addition as a mass fraction. The examples use the release minimum of 205 ppm and assume uniform distribution with no processing losses.

Powder addition (% w/w)	Powder in a 100 kg batch	Minimum A + B + C contribution
0.50%	0.50 kg	1.025 mg/kg
1.00%	1.00 kg	2.05 mg/kg
2.00%	2.00 kg	4.10 mg/kg

These are calculation examples. Select the use level through formulation trials. For a lot-specific calculation, substitute the HPLC result from its certificate of analysis.

Incorporation and compatibility

Water-phase addition Reserve some formulation water and stir while adding the weighed powder gradually. Allow it to dissolve before adding the premix to the main batch. A side-by-side sample of the unmodified base helps distinguish extract colour or haze from the appearance of the base itself.

Pilot checks Record the addition temperature, mixing time and final pH. Check for sediment, colour change and odour after cooling and during storage. Where marker retention is critical, verify A + B + C in the finished base using an analytical method suitable for that matrix.

Preservation Assess the preservation of the finished aqueous product in its intended packaging. The microbial limits on page 1 apply to the supplied dry ingredient.

Packaging and storage

Packed in two food-grade plastic liners tied with cotton cord, inside a kraft paper bag or fibre drum. Keep tightly closed in a cool, dry place protected from light. Shelf life is 24 months when properly stored.

References: Sur R et al. Archives of Dermatological Research 300 (2008), 569–574. doi.org/10.1007/s00403-008-0858-x. Marker nomenclature: WO 2021/175451 A1, para. 0051.

Shaanxi Pinhon Biotechnology Co., Ltd. | tech@pinhoningredients.com