BIOMOD LABS · RESEARCH PEPTIDE CO.

RESEARCH COMPOUND MONOGRAPH · SERIES 1 · NO. SOF-006

Dihexa + J-147 (Softgel Preparation)

A two-component SEDDS softgel preparation combining the angiotensin IV-derived hexapeptide analogue Dihexa with the curcumin-derived synthetic small molecule J-147 — research tools for studying HGF/c-Met-mediated synaptogenesis (Dihexa) and ATP synthase / proteostasis pathways (J-147) in cognition-related neuronal preparations.

CATALOG REFERENCE	FORM FACTOR	PACK SIZE	DATE OF ISSUE
BM-SOF-006	Softgel · Dihexa 30 mg + J-147 10 mg per capsule	30 capsules per bottle	May 2026

*This research preparation is a two-component softgel formulation combining **Dihexa** (N-hexanoic-Tyr-Ile-(6) amino hexanoic amide), an angiotensin IV-derived hexapeptide analogue developed at Washington State University by Joseph Harding and colleagues, and **J-147**, a curcumin-derived synthetic small molecule developed at the Salk Institute by Kim Schubert and colleagues. The two compounds are research tools for studying cognition-related pathways: Dihexa engages the hepatocyte growth factor (HGF) / c-Met receptor system with reported effects on synapse formation; J-147 has been characterised for effects on mitochondrial function, neurotrophic signalling, and proteostasis pathways relevant to neuronal biology. The preparation is supplied at 30 mg Dihexa + 10 mg J-147 per softgel capsule, 30 capsules per bottle in a deep-navy shell. **This monograph summarises published cellular pharmacology and preclinical findings for laboratory research reference only.***

01 Component Composition

COMPONENT A — DIHEXA	30 mg · N-hexanoic-Tyr-Ile-(6) amino hexanoic amide · angiotensin IV-derived hexapeptide analogue · CAS 1401708-83-5 · Washington State University development
COMPONENT B — J-147	10 mg · Curcumin-derived synthetic small molecule · CAS 1146963-51-0 · Salk Institute development
PACK SIZE	30 softgels per bottle
SHELL	Deep-navy softgel
ENTERIC COATING	None (immediate-release configuration)
VEHICLE	SEDDS lipid-based fill
ANALYTICAL SPECIFICATION	Component-level ≥ 98 % purity by HPLC; content uniformity per softgel verified to USP standards

02 Rationale for Combined Composition

The two-component combination engages two mechanistically distinct pathways relevant to neuronal biology research. **Dihexa** was developed by McCoy, Harding and colleagues at Washington State University as a small-peptide analogue of the angiotensin IV C-terminal hexapeptide. The molecule's principal characterised mechanism is engagement of the hepatocyte growth factor (HGF) / c-Met receptor pathway, with downstream effects on synaptogenesis in cell-culture neuronal preparations and rodent learning paradigms. **J-147** was developed by Prior, Schubert and colleagues at the Salk Institute through systematic structure-activity work on curcumin derivatives screened for neuroprotective activity in cell-culture neurotoxicity assays. Subsequent characterisation of J-147 has reported effects on mitochondrial function (including ATP synthase engagement reported by Goldberg and colleagues in 2018), proteostasis pathways, and neurotrophic signalling.

03 Cellular Pharmacology

Dihexa's HGF/c-Met receptor engagement was characterised in cell-culture preparations of hippocampal neurons, where the molecule produced increased synaptogenesis markers and supported dendritic spine formation. The hexapeptide structure with hexanoic acid modifications confers substantially improved blood-brain-barrier permeation compared with the parent angiotensin IV peptide. J-147 was identified through a curcumin-derived chemistry programme aimed at producing more bioavailable and stable analogues of curcumin's neuroprotective pharmacology. The molecule has subsequently been characterised across multiple cellular and rodent neuronal-research preparations.

F Softgel Formulation Considerations

SEDDS-CLASS SOFTGEL CHEMISTRY

The softgel form factor employs a self-emulsifying drug delivery system (SEDDS) lipid-based vehicle inside a gelatin or modified-gelatin shell. SEDDS formulations consist of isotropic mixtures of oils, surfactants, co-surfactants, and the active compound, which spontaneously form fine oil-in-water emulsions upon contact with aqueous gastrointestinal fluids. This formulation strategy is particularly useful for poorly water-soluble actives, supporting dissolution and absorption from the gastrointestinal lumen. Key softgel-formulation considerations are (a) **shell composition** — gelatin shells are sensitive to moisture and temperature; modified-gelatin and plant-based shell alternatives are sometimes used; (b) **enteric coating** — pH-dependent polymer coatings (e.g., methacrylic acid copolymers) delay capsule disintegration until passage through the acidic stomach, releasing the contents in the more neutral environment of the small intestine; (c) **shell colour** — opacifiers and colourants protect light-sensitive actives and provide product identification; (d) **fill volume** — typical softgel fill volumes range from 0.3 to 1.5 mL per capsule, with corresponding shell sizes selected for the formulation.

04 Laboratory Handling and Storage

Sealed softgels held at controlled room temperature (15–25 °C), protected from moisture and direct light. Working quantities are determined by the investigator's experimental design.

05 References

1. McCoy AT, Benoist CC, Wright JW, et al. Evaluation of metabolically stabilized angiotensin IV analogs as procognitive/antidementia agents. *J Pharmacol Exp Ther.* 2013;344(1):141–154. PMID: 23055539
2. Benoist CC, Wright JW, Zhu M, Appleyard SM, Wayman GA, Harding JW. Facilitation of hippocampal synaptogenesis and spatial memory by C-terminal truncated Nle1-angiotensin IV analogs. *J Pharmacol Exp Ther.* 2011;339(1):35–44. PMID: 21719467
3. Chen Q, Prior M, Dargusch R, et al. A novel neurotrophic drug for cognitive enhancement and Alzheimer's disease. *PLoS One.* 2011;6(12):e27865. PMID: 22194796
4. Goldberg J, Currais A, Prior M, et al. The mitochondrial ATP synthase is a shared drug target for aging and dementia. *Aging Cell.* 2018;17(2):e12715. PMID: 29316249