Univestin® and AmLexin™ Synergy for Joint Care

Perspectives from Dr. Qi Jia, PHD, Chief Scientific Officer, Unigen Inc.

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Research on Univestin® and AmLexin™ show that they may potentially be an alternative, natural and plant-based solution for the management of OA and/or its associated symptoms. Univestin® being known for its anti-inflammatory and analgesic actions, and AmLexin™ having research to suggest it could support cartilage degradation – these two ingredients could be the missing factor in your next Joint Support supplement.

The following perspectives from Dr. Qi Jia, PHD, Chief Scientific Officer of Unigen Inc., present valuable insights on Univestin® and AmLexin™ as a synergistic solution to support Joint Health. By exploring Dr. Jia's experiences and opinions, this document aims to shed light on the efficacy and potential benefits of these innovative ingredients.

Main findings of this study[1]

- This preclinical *in vivo* study discovered the unexpected synergy in reducing pain sensitivity after combining Univestin® with AmLexin™.
- This study demonstrated superior cartilage production from the combination of Univestin® and AmLexin™ based on histopathology images, plus less Matrix GAG release, less inflammation/cellular infiltration, and less structural/bone abnormality.
- This study also confirmed joint cartilage protection based on reduced urinary biomarker of cartilage degradation – uCTX-IIa.
- All above findings pointed to a merit of combining Univestin® with AmLexin™ in a functional formula for joint care.

Main mechanisms that are responsible for the efficacy of Univestin® and AmLexin™

- Univestin® was discovered by screening 1,230 plants for novel COX & LOX dual inhibitors. By inhibiting COX1/COX2 & 5-LOX pathways, the combination of two bioflavonoids – *Baicalin* and *Catechin* – has been clinically proven for fast and long-lasting symptom relief, such as reduced stiffness in 3 days, improved discomfort in 5 days, improved joint mobility in 7 days.
- AmLexin™ was discovered by screening 279 plants for reduction of GAG breakdown from joint cartilage. The polyphenols oxyresveratrol from the root barks of mulberry tree and *catechins* in heartwood of Acacia tree showed potent inhibition of super oxide anion that is the free radical generated at the site of joint wear and tear, and further down-regulated joint cartilage catabolic pathways such as proinflammatory cytokines – IL-1, IL-6 and especially MMPs (Matrix metalloproteinases) that are enzymes playing a key role in cartilage degradation, particularly in osteoarthritis (OA).

(1) Yimam M et al. (2017) Cartilage Protection and Analgesic Activity of a Botanical Composition Comprised of Morus alba, Scutellaria baicalensis, and Acacia catechu.

Why formulators should consider this synergy when creating products for joint conditions like osteoarthritis

- Using an *in vivo* model to confirm the synergy when creating ingredients for joint care will provide scientific evidence for efficacy, extrapolate the best combination ratio and dosages, and also add a proprietary position if unexpected synergy is observed.
- Osteoarthritis is a chronic joint condition that is initiated by wear and tear of joint cartilage. The joint space narrowing eventually causes bone-to-bone friction, with clinical symptoms such as joint stiffness, pain, loss of mobility and joint function.
- Univestin® is the first generation of joint care ingredient patented by Unigen targeting fast and long-lasting symptom relief.
- AmLexin™ is a disease modifying, natural active – since it can protect cartilage from wear and tear, and slow down the catabolic process.
- The combination of Univestin® and AmLexin™ not only contributes to symptom relief, but also provides joint cartilage structural protection.

The implications of this study's results for the nutraceutical industry

- Unigen is a leading, natural product research institute. We have introduced two generations of joint care ingredients separately as Univestin® and AmLexin™ from the mechanism of action-based screening through the Phytologix® library of medicinal plants.
- We strongly believe the development of nutraceutical composition shall be scientific evidence based and clinically proven.
- We hope this pre-clinical research will demonstrate the pathways and suggest enough scientific evidence to support people in developing unique formula for the nutraceutical industry.

The importance of creating natural solutions for individuals with osteoarthritis

- The global osteoarthritis (OA) therapeutics market is experiencing significant growth, driven by the increasing prevalence of OA, and the growing physically active aging population. The OA global market is expected to reach 13.57 billion USD by 2030, growing at a Compound Annual Growth Rate (CAGR) of 6.9% from 2025 to 2030.
- Even with significant investments in research and development for new OA treatments, including biologics, disease-modifying drugs and regenerative medicine, there are limited options today for osteoarthritis: medications (NSAIDs, acetaminophen), physical therapy and surgery. No disease modifying drug has ever been approved yet.
- Osteoarthritis is a chronic and complicated condition characterised by periodic symptom flare-ups requiring lifelong management for painful and deteriorating joint conditions. The potential side effects from taking NSAIDs over a long period of time further dampen the quality of life and accelerate the progression of Osteoarthritis.
- Natural compounds possess the molecular mechanisms on regulating COX/LOX pathways, neutralising free radicals, and balancing catabolic and anabolic homeostasis of wear and tear, and repair of joint cartilage. The effects from natural compounds are mild, equitable and multi-functional vs being potent, selective and having a singular approach from NSAIDs. It is more feasible and safe to incorporate a natural composition in a nutritional diet for daily and lifelong joint care, plus lifestyle modifications and other supportive therapy.