Autophagy is a cellular process that activates under conditions of nutrient stress. Excessive and long-term induction of autophagy leads to the destruction of essential proteins and organelles. It is also related to congestive heart failure, myocardial infarction, and ischemia reperfusion.

The proposed precise formulation of an amino acid solution comprised of isoleucine, leucine, valine and arginine increases mTOR signaling and cell growth in patients with damaged tissues and heart disease. In addition, the osmolarity and pH of the solution allow it to be administered in large volumes without risk of significant osmotic shift.

- Non-toxic.
- Allows high volume administration due to osmolarity (313 mosm) and pH (7.4).
- Activates mTOR signaling to proliferate cell growth.
- Suppresses autophagy and endoplasmatic reticulum stress.

**TECHNOLOGY SUMMARY**

**TECHNOLOGY TYPE**
Drug Delivery  
Small Molecules  
Cardiology  
Biologics  
Amino Acid  
Arginine

**STAGE OF DEVELOPMENT**
- Proof of concept demonstrated through testing in mice with IRS1/2 deficiency.
- Further studies required to demonstrate efficacy.

**IP PROTECTION**
US Utility Patent Pending  
Branched chain amino acids: formulations and methods of treatment  
US20150126604A1

**FEATURES AND BENEFITS**

**INVENTOR PROFILE**
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