

# World Nutraceutical Conference and Expo

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## Efficacy and toxicity testing in 3D tissue models provides improved outcomes

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Efficacy and toxicity testing are key to understanding the effects of any nutraceutical compound in the body. Research has shown that *in vitro* testing done in 3D tissue models is superior to traditional 2D cell culture. We have patented an efficient method of creating and testing 3D cellular models for a variety of tissues including oral health, metabolic function and diabetes, and 12 different types of cancer. For our clients we have compared the nutraceutical product, Triology, to competitive mouth rinses, showing that Triology was less toxic to healthy gum tissue and more efficacious in killing bacteria. Studies of the insulin-producing islet clusters showed that our 3D tissue model outperformed by 2.5 times intact human tissue from donors in predicting which compounds would work best in the body. Likewise, the diabetes drug glybenclamide had a greater response in the 3D tissue model than on native human islets or cells grown in 2D culture. The same trend was noted when testing the effect of a nutraceutical product on miniaturized cancer tumors. The proprietary nutraceutical compound showed better effects in the 3D tissue model. The same was true for standard chemotherapies like paclitaxel, which had no effect on ovarian cancer cells grown in a monolayer, but strongly killed those same cells when they were grown in 3D (60% cell death a 100 M dose). We have tested efficacy and toxicity assays on over 100 different nutraceutical compounds using the 3D tissue model, improving the predictability of the test for *in vivo* outcomes.

### Biography

Lisa Stehno-Bittel began her career in healthcare as a physical therapist. With more than 25 years of research experience in the fields of cell biology and diabetes, she has over 60 publications in scientific journals and has received more than \$9 million in grant funding for her research. Lisa is on faculty at the University of Kansas Medical Center and serves as President and Founder of Likarda, LLC. She has a BS degree from the University of Kansas, a PhD from the University of Missouri and completed a pharmacology fellowship at the Mayo School of Medicine. Lisa has received numerous awards including the Outstanding Faculty Research Award from the University of Kansas Medical Center and the Jim Baxendale Commercialization Award.

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