Preliminary Results Show TAE Life Sciences' Novel Boron-Containing Drug Holds Promise for Revolutionizing Boron Neutron Capture Therapy

Andrea Monti Hughes, PhD presented at 61st Annual PTCOG Conferences, in vivo experimental testing data of novel boronated mediated Boron Neutron Capture Therapy

Madrid and Irvine, Calif., July 06, 2023 – TAE Life Sciences, a pioneering company in the field of cancer treatment, today announces the results from early testing of its TC440 boron-containing dipeptide compound for Boron Neutron Capture Therapy (BNCT). The findings suggest that TC440, along with its counterpart TC442, holds promise in revolutionizing cancer treatment strategies.

"Finding safe and effective ways to treat a variety of cancers is of utmost importance in our mission to improve and transform cancer care. The work we are doing at TAE Life Sciences to create new drugs like TC440 for BNCT is critical in this endeavor," said Kendall Morrison, Chief Science Officer, TAE Life Sciences. "The promising preliminary results from our early testing indicate that these exciting new peptides hold significant potential in revolutionizing cancer treatment strategies. These findings highlight the immense potential of TC440 in enhancing the therapeutic efficacy of BNCT, bringing us closer to a future where safer and more effective treatments are available for cancer patients."

TC440 and TC442 belong to a family of dipeptides that were synthesized at TAE Life Sciences using cutting-edge BPA Structural Analysis Relationship (SAR) chemistry. These compounds have demonstrated superior solubility compared to the widely used Boronophenylalanine (BPA), enabling the formulation of highly concentrated solutions. Formulations of TC440 and TC442 in fructose at 150 mg/ml have been achieved, providing a remarkable advancement in delivering boron to tumors. By leveraging the dipeptides' improved solubility, higher tumor boron delivery was achieved in multiple xenograft models, showcasing the superior uptake of TC440 and TC442. In addition to enhanced solubility, TC440 and TC442 possess the ability to be internalized via LAT1 transporters and PEPT1, even in LAT1 negative cell lines.

One of the most exciting discoveries is that these compounds deliver two to three times more boron than BPA in multiple human xenograft models and have a longer half-life compared to BPA. This increased boron delivery capability and longer half-life hold immense potential in enhancing the therapeutic efficacy of BNCT as a treatment modality.

To further investigate the therapeutic applications of TC440 and TC442, TAE Life Sciences is collaborating on BNCT experiments with the Department of Radiobiology at the National Atomic Energy Commission (CNEA) with Dr. Andrea Monti Hughes and Team, from Argentina. Initial studies conducted in the hamster cheek pouch oral cancer model have yielded encouraging preliminary results and were presented at 61st Annual PTCOG Conferences held in Spain, this year.

The ongoing study conducted in the hamster cheek pouch oral cancer model, which closely mimics the development of precancer and malignant human oral tumors, is a critical milestone in the research journey. The model provides a unique tumor environment surrounded by precancerous tissue, allowing researchers to investigate BNCT's dose-limiting effects, as observed in field-cancerized oral mucosa in head and neck cancer patients.

In this preliminary study, an 800 mg TC440/kg dose has demonstrated an increase in boron uptake compared to the 300 mg BPA/kg dose typically administered during testing, while maintaining higher

tumor/blood and tumor/normal tissue ratios. However, similar boron concentrations and ratios were achieved compared to 800 mg BPA/kg. Unlike the BPA solution, the TC440 formulation exhibited no precipitation issues, providing a practical advantage.

When evaluating the therapeutic effect of BPA/BNCT versus TC440/BNCT, the preliminary study unveiled promising results. TC440 demonstrated a doubling of complete responses compared to BPA/BNCT protocols, particularly in medium and large hamster tumors treated with TAE/BNCT. Additionally, partially responded tumors treated with TC440 that exhibited a 50% in volume reduction were higher than in the BPA/BNCT group. Ongoing studies to confirm these early findings are underway.

Ongoing studies will further explore the potential of new dipeptides from TAE Life Sciences and expand upon these exciting preliminary findings. “The study of new boron compounds that could increase significantly BNCT therapeutic effect while preserving dose-limiting tissues is of utmost importance in BNCT. Huge efforts have been done for many years around the World, and radiobiological studies in in vivo models are a critical step to decide if a boron compound could be consider potentially useful in a clinical setting” said Andrea Monti Hughes (CNEA/CONICET, Argentina).

The groundbreaking discovery of TC440 and its therapeutic potential for cancer treatment using BNCT marks a significant milestone in the field of oncology. The company will continue to investigate the therapeutic potential of its TC440 and TC442 boron-containing drugs and will have the results published in a peer-reviewed scientific journal.

TAE Life Sciences is committed to advancing innovative solutions to address the challenges of cancer treatment, with the goal of improving patient outcomes and transforming the future of cancer care. Morrison will be presenting the results of this collaborative study with CNEA at the 19th Annual Japanese Neutron Capture Therapy Congress in Kyoto, Japan.

About BNCT

BNCT is a combination treatment based on the reaction that occurs when a non-toxic compound containing boron-10 is irradiated with a low-energy neutron beam. BNCT differs radically from other radiation therapies and shows promise in becoming the next-generation cancer treatment. Research has shown that BNCT has the capability of killing cancer cells that are resistant to traditional radiation therapy with limited harm to healthy tissue. Current advances in both neutron radiation technology and medicinal boron drug targeting are enabling BNCT’s potential to improve patient care while also improving treatment economics. To date, approximately 2,000 patients have been treated with BNCT at research sites worldwide.

About TAE Life Sciences

TAE Life Sciences is a privately held biotechnology company committed to developing a new biologically targeted radiation therapy based on Boron Neutron Capture Therapy (BNCT). TLS is developing the next-generation targeted boron drugs and low-energy accelerator-based neutron source – optimized for an in-hospital BNCT program that can one day treat patients with the most aggressive and recurrent cancers. We have assembled a world-class, cross-functional team of clinicians, radiation oncologists, physicists, and other researchers to enable us to bring our technology to cancer patients who need it most. TLS’s target drugs and neutron radiation system are currently in development and have not been approved for sale. More information about TAE Life Sciences is available at www.taelifesciences.com.