Targeting Cancer Using Super Activated Killer T Cells (SAK-T)

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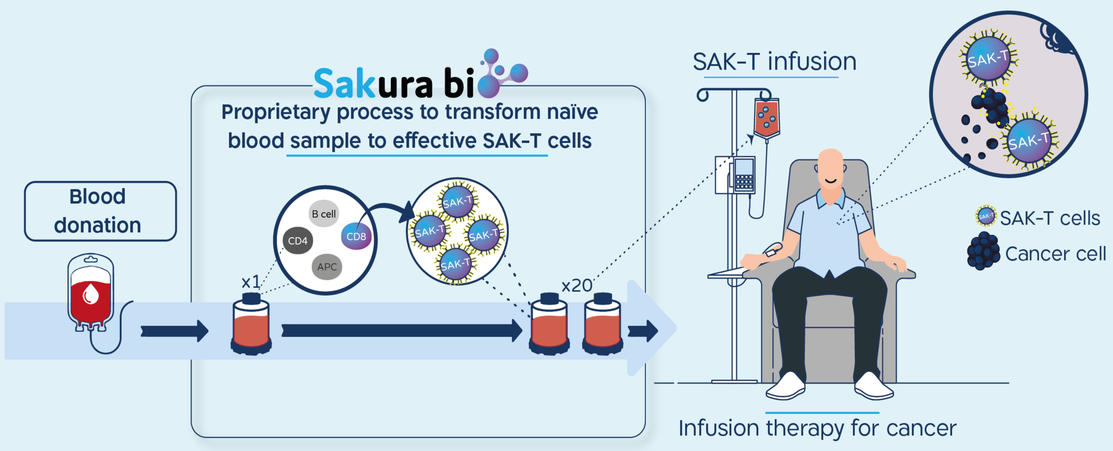
Abstract:

Adoptive Cell Transfer (ACT) is a highly promising cancer immunotherapy approach, exhibiting efficacy mainly against hematological malignancies.

In ACT, cells are isolated, expanded, and often manipulated to enhance their therapeutic potential. Cytokine-induced killer (CIK) cells, which originate from naïve donor-derived peripheral blood mononuclear cells (PBMCs), have emerged as a promising avenue. However, so far CIK therapies demonstrated limited efficacy in leukemia patients.

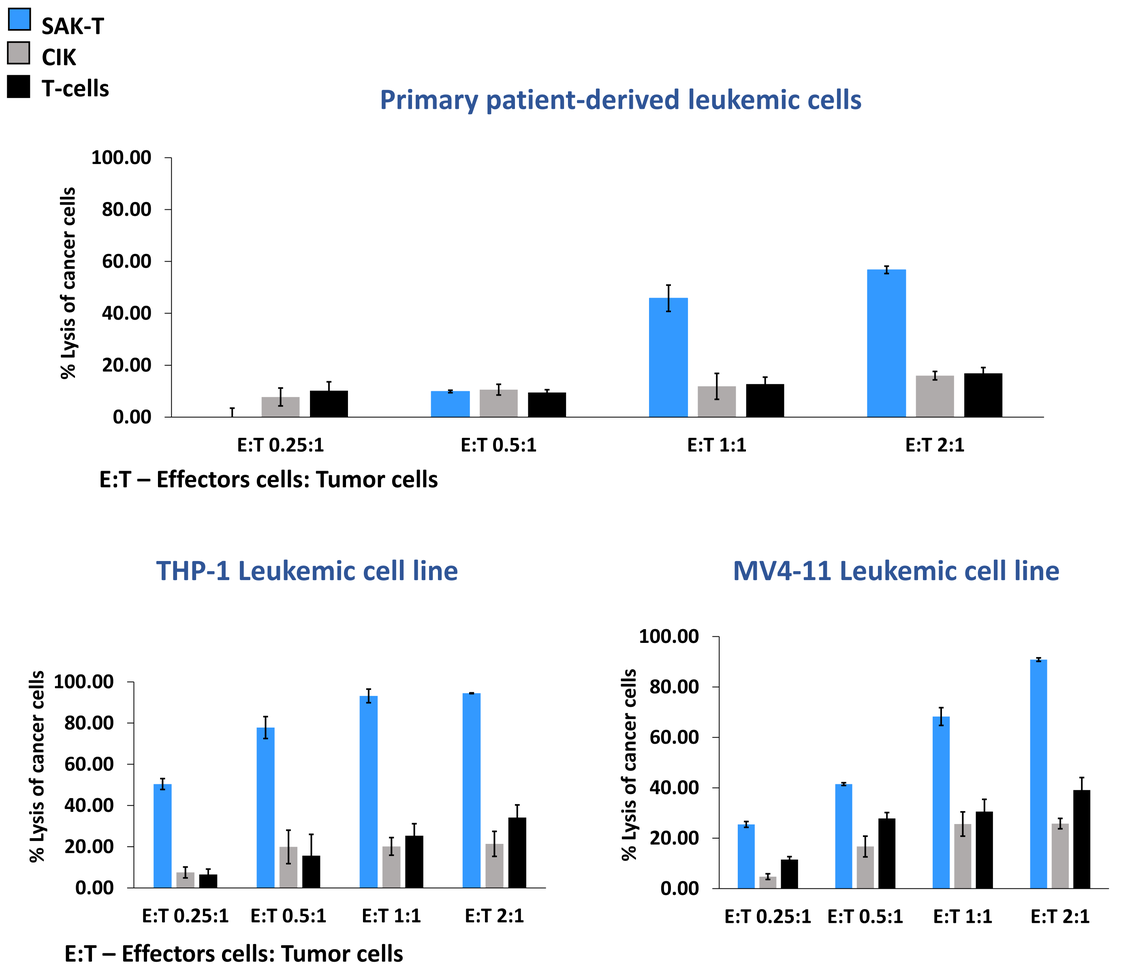
Sakura bio has developed an efficient technology for enriching cytotoxic CD8+ T-cells from naïve healthy PBMC donations. This population named SAK-T cells (Super Activated Killer T-cells), consist of 70-80% cytotoxic CD8+ T cells and 20-30% CD4+ T cells. In comprehensive preclinical studies we have demonstrated a superior killing capability of SAK-T cells compared to CIK cells against leukemic tumor cell lines, primary tumors and xenograft mice models.

The exceptional efficacy of SAK-T cells in targeting leukemic cells prompted Sakura bio to prioritize Acute Myeloid Leukemia (AML) as the initial indication for clinical study.



Results:

1. Superior Cytotoxic Activity of SAK-T Cells Against Leukemic Cells



Superior cytotoxic activity of SAK-T cells against leukemic cell lines and primary patient-derived leukemic cells.
The indicated effector cells (SAK-T, CIK & activated T cells) were incubated with CFSE-labeled leukemic cells at different ratios of target to effector cells. The proportion (%) of lysed tumor cells after 24 hours of incubation ($CFSE^{+}PI^{-}$) was evaluated using FACS.

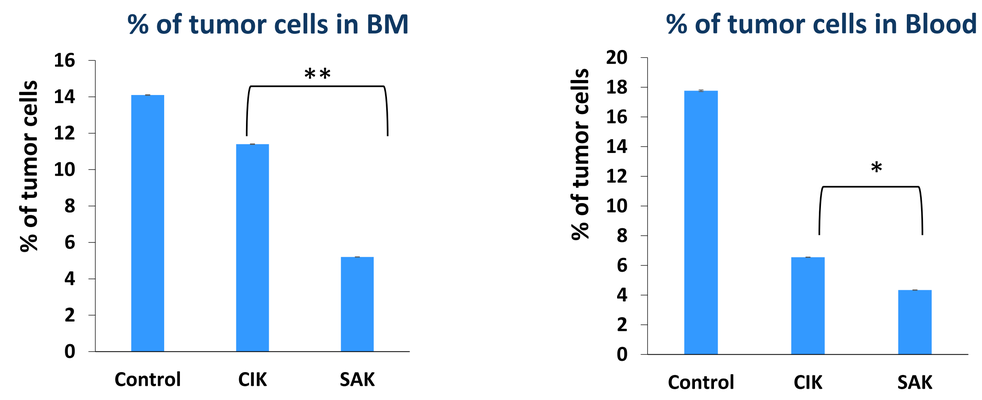
Results (cont.):

2. Superior Anti-AML Activity of SAK-T Cells in a Xenograft Mice Model

Enhanced Anti-AML Activity of SAK-T Cells in a NSG Mice Xenograft Model.

Irradiated NSG mice were intravenously injected with MV4-11 cells on day 1. On days 7 and 8, the mice received intravenous injections of either SAK-T or CIK cells, along with intraperitoneal administration of IL-2.

The percentage of cancer cells in the bone marrow and in the blood of NSG mice was analyzed on day 14.



3. SAK-T Cells Demonstrate a High Safety Profile with Limited GvHD Potential

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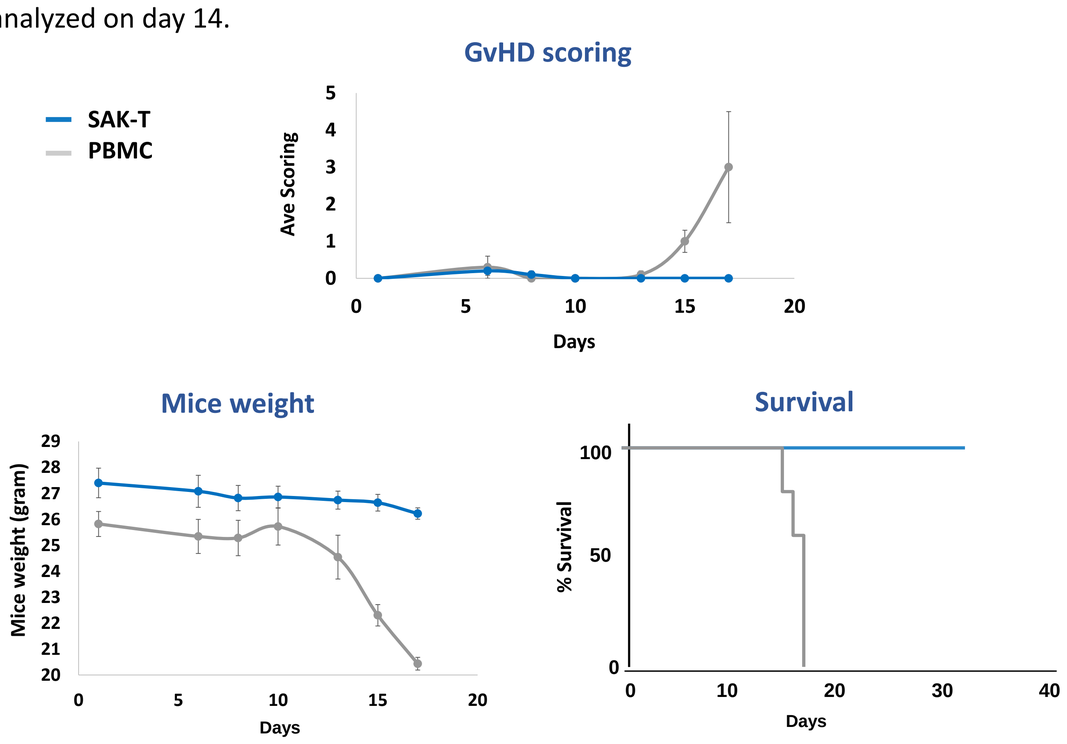

Conclusion:

Effectivity

- Exceptional anti-leukemia activity
- Promising preclinical studies
- Proven superiority *vs*. competitors alternatives

Safety

- High safety profile with limited GvHD
- Originated from healthy donors, with no risk of tumor cell contamination

Economical

- Cost-effective, simple and short manufacturing process
- No need for genetic manipulations (CAR/TCR)
- An off-the-shelf availability for a rapid use