The therapeutic cancer vaccine PDC*lung01 induces immune responses with or without anti-PD-1 treatment in patients with non-small cell lung cancer

A. Sibille1, J. Plumas2, I. Demedts3, E. Pons-Tostivint4, C. Van de Kerkhove5, S. Derijcke6, M. Collodoro7, K. Al Badawy8, C. Duchayne7, C. Debruyne7, M. Pérol8, E. Buchmeier9, C. Kuppens10, J. Vansteenkiste11

1. Department of Pulmonology, University Hospital of Liège, Liège, Belgium; 2. PDC*lne Pharma, Grenoble, France; 3. Department of Pulmonary Diseases, AZ Delta Roeselare, Belgium; 4. Medical Oncology, Nantes University, CHU Nantes, France; 5. Department of Pulmonology and Thoracic oncology, Vitus Sint-Niklaas, Belgium; 6. Department of Thoracic Oncology/Pulmonology, AZ Groeninge Kortrijk, Belgium; 7. PDC*line Pharma, Liege, Belgium; 8. Department of Medical Oncology, Léon Bérard Cancer Centre, Lyon, France; 9. Kliniken der Stadt Koeln gGmbH, Lungenklinik Koeln-Merheim, Germany; 10. Department of Pulmonology and Thoracic oncology, Jessa Hospital, Hasselt, Belgium; 11. Department of Respiratory Oncology, University Hospitals KU Leuven, Belgium

PDC*lung01
Off-the-shelf plasmacytoid dendritic cell-based product

- PDC*lung01 (IMP) is a therapeutic cancer vaccine based on an irradiated plasmacytoid dendritic cell line loaded with HLA-A*0201 restricted peptides (NY-ESO-1, MAGE-A3, MAGE-A4, Multi-MAGE-A, MUC1, Survivin and Melan-A) able to prime and expand peptide-specific CD8+ T cells in vitro and in vivo, and is synergistic with anti-Programmed Death (PD)-1 (Charles, 2020; Lenogue 2021).

PDC*lung01 product

PDC-LUNG-101 study design

**A**
- Parental line: Shelf plasmacytoid dendritic cell (PDC).
- Following rejection platform based T-markers.

**B**
- Parental line: Shelf plasmacytoid dendritic cell line (PDC).
- High Yields 108-109 T cells.
- Phagocytic activity.
- Various peptides (100 ng).

Immunomonitoring assays

- Several circulating immune parameters were monitored at different times before and after vaccination using different assays developed by the sponsor: leukocyte count and determination of peptide-specific CD8+ T cells, for which a limit of quantification (LOQ) was defined to better assess the fold changes of the cell expansion.

Kinetic of circulating main leukocytes

**Cohort A1**
- Baseline
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6

**Cohort A2**
- Baseline
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6

**Cohort B1**
- Baseline
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6

Basal circulating frequencies of antigen-specific CD8+ T-cells (ASTC)

- The basal frequencies of antigen-specific CD8+ T-cells for A (left) and B (right) cohorts were similar: The proportions of tumor antigen-specific T cells targeted were generally within the limit of quantification (LOQ, grey zone). By contrast control viral-specific T cells (EBV or Flu) were well detected.

Expansion of circulating antitumor-specific CD8+ T-cells following PDC*lung01 treatment

**Cohort A1**
- Baseline
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6

**Cohort A2**
- Baseline
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6

**Cohort B1**
- Baseline
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6

**Cohort B2**
- Baseline
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6

Overview of the immunomonitoring workflow

- Thrombin CD8 purification.
- Multiparameter cell sorting.
- CD8 T cells and circulating leukocytes.
- CD8 T cells for ASTC.
- ASTC purified with CD8+ T cells.

Naive and Memory circulating CD8+ T-cells

- Compared to healthy donors (HD), at baseline, patients from the different cohorts displayed less naive cells with a more heterogeneous pattern.

Correlation between Best Overall Response and immunological response in B1 patients

- PDC*lung01 is biologically active to induce an antitumor immune response in a significant number of patients, synergistic with pembrolizumab and associated with clinical responses.

>>> Conclusion <<<

- PDC*lung01 is biologically active to induce an antitumor immune response in a significant number of patients, synergistic with pembrolizumab and associated with clinical responses.

Contact info: j.plumas@pdc-line-pharma.com

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