

**The combination of arsenic, interferon-alpha, and zidovudine restores an "immunocompetent-like" micro-environment in patients with adult T-cell leukemia lymphoma**

Ghada Kchour, Sa Rahim Rezaee, Reza Farid, Akram Ghantous, Houshang Rafatpana, Mahdi Tarhini, Mohamad-Mehdi Kooshyar, Hiba El Hajj, Fadwa Berry, Roudaina Nasser, et al.

► **To cite this version:**

Ghada Kchour, Sa Rahim Rezaee, Reza Farid, Akram Ghantous, Houshang Rafatpana, et al.. The combination of arsenic, interferon-alpha, and zidovudine restores an "immunocompetent-like" micro-environment in patients with adult T-cell leukemia lymphoma. *Retrovirology, BioMed Central*, 2014, 11 (Suppl 1), pp.O4. <inserm-00924972>

**HAL Id: inserm-00924972**

**<http://www.hal.inserm.fr/inserm-00924972>**

Submitted on 7 Jan 2014

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



ORAL PRESENTATION

Open Access

# The combination of arsenic, interferon-alpha, and zidovudine restores an “immunocompetent-like” micro-environment in patients with adult T-cell leukemia lymphoma

Ghada Kchour<sup>1</sup>, SA Rahim Rezaee<sup>2</sup>, Reza Farid<sup>3</sup>, Akram Ghantous<sup>4</sup>, Houshang Rafatpana<sup>3</sup>, Mahdi Tarhini<sup>5</sup>, Mohamad-Mehdi Kooshyar<sup>6</sup>, Hiba El Hajj<sup>7</sup>, Fadwa Berry<sup>1</sup>, Roudaina Nasser<sup>7</sup>, Abbas Shirdel<sup>6</sup>, Zeina Dassouki<sup>7</sup>, Mohamad Ezzedine<sup>1</sup>, Hossein Rahimi<sup>6</sup>, Ardeshir Ghavamzadeh<sup>8</sup>, Hugues de Thé<sup>9</sup>, Olivier Hermine<sup>10</sup>, Mahmoud Mahmoudi<sup>3</sup>, Ali Bazarbachi<sup>7\*</sup>

From 16th International Conference on Human Retroviruses: HTLV and Related Viruses  
Montreal, Canada. 26-30 June 2013

HTLV-I associated adult T-cell leukemia/lymphoma (ATL) carries a dismal prognosis due to chemo-resistance and immuno-compromised micro-environment. The combination of zidovudine and interferon-alpha (IFN) significantly improved survival in ATL. Promising results were reported by adding arsenic trioxide to zidovudine and IFN. Here we assessed Th1/Th2/T<sub>reg</sub> cytokine gene expression profiles in 16 ATL patients before and 30 days after treatment with arsenic/IFN/zidovudine, in comparison with HTLV-I healthy carriers and sero-negative blood donors. ATL patients at diagnosis displayed a T<sub>reg</sub>/Th2 cytokine profile with significantly elevated transcript levels of Foxp3, interleukin-10 (IL-10), and IL-4 and had a reduced Th1 profile evidenced by decreased transcript levels of interferon- $\gamma$  (IFN- $\gamma$ ) and IL-2. Most patients (15/16) responded, with CD4<sup>+</sup>CD25<sup>+</sup> cells significantly decreasing after therapy, paralleled by decreases in Foxp3 transcript. Importantly, arsenic/IFN/zidovudine therapy sharply diminished IL-10 transcript and serum levels concomitant with decrease in IL-4 and increases in IFN- $\gamma$  and IL-2 mRNA, whether or not values were adjusted to the percentage of CD4<sup>+</sup>CD25<sup>+</sup> cells. The observed shift from a T<sub>reg</sub>/Th2 phenotype before treatment toward a Th1 phenotype after treatment with arsenic/IFN/zidovudine may play an important role in restoring an immuno-competent

micro-environment, which enhances the eradication of ATL cells and the prevention of opportunistic infections.

#### Authors' details

<sup>1</sup>Department of Biology, Faculty of Sciences, Lebanese University, Hadath, Lebanon. <sup>2</sup>Microbiology and Virology Research Center, Bu-Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran. <sup>3</sup>Immunology Research Centre Bu-Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran. <sup>4</sup>Lebanese American University, School of Arts and Sciences, Lebanon. <sup>5</sup>Islamic University, Faculty of Nursing Sciences, Lebanon. <sup>6</sup>Department of Internal Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. <sup>7</sup>Department of Internal Medicine, American University of Beirut, Beirut, Lebanon. <sup>8</sup>Tehran University of Medical Sciences, Tehran, Iran. <sup>9</sup>INSERM UMR 944 and CNRS UMR 7212, Hôpital Saint Louis, Paris, France. <sup>10</sup>CNRS UMR 8147, Hôpital Necker, Paris, France.

Published: 7 January 2014

doi:10.1186/1742-4690-11-S1-O4

**Cite this article as:** Kchour *et al.*: The combination of arsenic, interferon-alpha, and zidovudine restores an “immunocompetent-like” micro-environment in patients with adult T-cell leukemia lymphoma.

*Retrovirology* 2014 **11**(Suppl 1):O4.

<sup>7</sup>Department of Internal Medicine, American University of Beirut, Beirut, Lebanon

Full list of author information is available at the end of the article