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Tumor liberated protein (TLP) as potential vaccine for lung cancer patients

Tumor liberated protein (TLP) has been previously described as a TAA (complex) present in the sera from lung cancer patients with early stage disease. Since early detection improves overall survival in lung cancer, identification of screening biomarkers for patients at risk for the development of this disease represents an important target. Starting from the peptide epitope RTNKEASI previously isolated from TLP complexes, we generated a rabbit anti-RTNKEASI serum. This antiserum detected and immunoprecipitated a 55kDa protein band in the lysate of the lung cancer cell line A549. This protein band was identified as aldehyde dehydrogenase isoform 1A1 through mass spectrometry, revealing the molecular nature of at least one component of the previously described TLP complex. Next, we screened a cohort of 29 lung cancer patients (all histologies), 17 patients with non-neoplastic lung pathologies and 9 healthy donors for the presence of serum ALDH1A1 and global serum ALDH by enzyme-linked immunosorbent assay. This analysis indicated that the presence of ALDH was highly restricted to patients with lung cancer. Interestingly, the global ALDH test detected more lung cancer patients compared to the ALDH1A1-specific test, suggesting that other ALDH isoforms might add to the sensitivity of the assay. Our data suggests that ALDH levels may therefore be evaluated as part of a marker panel for lung cancer screening. Finally, the ability of the immune system to recognize a TAA, enables the development of a vaccine approach for preventive and therapeutic application and represents a main target of this field of research.

Recent publications

1. Giulio Tarro (2015) Migratory phenomenons, biothics and vaccinations. Advances in Microbiology. 5:720-723.
2. Giulio Tarro (2016) Lights and shadows of vaccinations. J of Vaccine Research and Development. 1(1):1-4.
3. Giulio Tarro (2016) Anti Rhinovirus activity of Ethyl1 4-(3-(2-(3-Methylisoxazol-5-Y1) Etthoxy) Propoxy) Benzoate (EMEB). Pharma. Anal. Acta. 7:469. Doi: 10.4172/2153-2435.1000469.
4. E Trapanese, U Scognamiglio, P Amato and G Tarro (2016) Preliminary data on the role of contrast enhanced ultrasound (CEUS) in early diagnosis and staging of rheumatoid arthritis. International Education and Research Journal. 2(8):41-42.
5. G Tarro (2016) Human vaccines for oncogenic viruses and perspectives for tumor antigens induced by virus. International Journal of Clinical & Medical Microbiology. 1:114-119.

Biography

Giulio Tarro graduated from Medicine School, Naples University (1962). He has been a Research Associate, Division of Virology and Cancer Research, Children's Hospital (1965-1968); Assistant Professor of Research Pediatrics, College Medicine (1968-1969), Cincinnati University, Ohio, USA; Oncological Virology Professor, Naples University (1972-1985). Chief Division Virology (1973-2003). He was the Head of the Department Diagnostic Laboratories for the period 2003-2006. He was the Emeritus for D Cotugno Hospital for Infectious Diseases, Naples in 2006. Since 2007 he has been the Chairman of Committee of Biotechnologies and VirusSphere, World Academy Biomedical Technologies, UNESCO, Adjunct Professor Department Biology, Temple University, College of Science and Technology, Philadelphia. He is a Recipient of the Sbarro Health Research Organization Lifetime Achievement Award (2010). His researches have been concerned with the characterization of specific virus-induced tumour antigens, which were the "finger-prints" left behind in human cancer. His achievements include patents in field: discovery of respiratory syncytial virus in infant deaths in Naples and of tumour liberated protein as a tumour associated antigen, 55 kilodalton protein overexpressed in lung tumours and other epithelial adenocarcinomas.

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