



Conference Abstract

A step forward in the identification of compounds interfering with the Embryonic Lethal Abnormal Vision (ELAV) protein - RNA complexes

Serena Della Volpe[‡], Daniela Rossi[‡], Francesca Vasile[§], Donatella Potenza[§], Marialaura Amadio[‡], Alessia Pascale[‡], Simona Collina[‡]

[‡] University of Pavia, Pavia, Italy

[§] University of Milan, Milano, Italy

Corresponding author: Simona Collina (simona.collina@unipv.it)

Received: 23 Jun 2017 | Published: 05 Jul 2017

Citation: Della Volpe S, Rossi D, Vasile F, Potenza D, Amadio M, Pascale A, Collina S (2017) A step forward in the identification of compounds interfering with the Embryonic Lethal Abnormal Vision (ELAV) protein - RNA complexes. BioDiscovery 20: e14670. <https://doi.org/10.3897/biodiscovery.20.e14670>

Abstract

RNA-protein interactions are pivotal in the regulation of biological systems and they are implicated in gene expression defect. In fact, RNAs in cells are in complex with RNA-binding proteins (RBPs) which influence every aspect of their biogenesis and function. Recent works have highlighted the involvement of these complexes in various pathological pathways and their potential as drug targets, suggesting a fascinating route for discovering new drugs able to inhibit or enhance gene expression Campos-Melo et al. (2014).

Among the most studied and better characterized RBPs are ELAV (Embryonic Lethal Abnormal Vision) or Hu proteins whose complexes with various RNAs are of great relevance in the etiology of different dysfunctions such as cancer, inflammation and neurodegenerative diseases. Recent studies have unearthed the concept of druggability of ELAV proteins and NMR has been proposed as a useful tool for investigating “protein-RNA” interactions (Nasti et al. 2017, Rossi et al. 2009).

Here we present our recent efforts to follow up with a rational investigation on ELAV subtype HuR. Given the described attitude of certain natural compounds to interfere with

ELAV-RNA complexes Kwak et al. (2009), we studied the interaction between HuR protein and a number of natural structurally-related compounds, including flavones, flavonols and coumarins. These results constitute the starting point to define the features of the “ideal ligand”.

Keywords

Embryonic Lethal Abnormal Vision (ELAV) protein - RNA complexes, NMR, natural compounds

Presenting author

Serena Della Volpe

Presented at

World BioDiscovery Congress 2017

References

- Campos-Melo D, Dropelmann C, Volkering K, Strong M (2014) RNA-binding proteins as molecular links between cancer and neurodegeneration. *Biogerontology* 15 (6): 587-610. <https://doi.org/10.1007/s10522-014-9531-2>
- Kwak H, Jeong K, Chae M, Kim S, Park W (2009) Flavonoids inhibit the AU-rich element binding of HuC. *BMB Reports* 42 (1): 41-46. <https://doi.org/10.5483/bmbrep.2009.42.1.1041>
- Nasti R, Rossi D, Amadio M, Pascale A, Unver MY, Hirsch AH, Collina S (2017) Compounds Interfering with Embryonic Lethal Abnormal Vision (ELAV) Protein–RNA Complexes: An Avenue for Discovering New Drugs. *Journal of Medicinal Chemistry* <https://doi.org/10.1021/acs.jmedchem.6b01871>
- Rossi D, Amadio M, Baraglia AC, Azzolina O, Ratti A, Govoni S, Pascale A, Collina S (2009) Discovery of Small Peptides Derived from Embryonic Lethal Abnormal Vision Proteins Structure Showing RNA-Stabilizing Properties. *Journal of Medicinal Chemistry* 52 (16): 5017-5019. <https://doi.org/10.1021/jm900741e>