

## Curcumin affects Hsp60 expression and function in a human neuronal cells

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Heat-shock protein (Hsp)60 is a mitochondrial protein involved in assisting the correct folding of other mitochondrial client proteins [1]. Recently, this chaperonine has been considered as an emerging target for Alzheimer's Disease (AD) because seems to be able to mediate the translocation of Amyloid Precursor Protein (APP) and Amyloid Beta peptide (A $\beta$ ) to the mitochondria [2]. The fundamental challenge on fighting the Alzheimer's Disease (AD) is the development of neuro-protective agents, able to interfere with biochemical pathways responsible for the protein aggregation process whose clinical signature is represented by the plaques deposition. In this study we investigated the effect of curcumin, an emerging lead-compound for the development of neuro-protective drugs, on Hsp60 gene, protein expression and folding activity using a neuroblastoma cell line (LAN5). We demonstrated that the treatment of LAN5 cells with curcumin caused a down-regulation of mitochondrial Hsp60 protein and gene expression. On the other hand, curcumin enhanced the folding activity of the chaperonine. The ability of curcumin to affect Hsp60 expression as well as its ability to interact with the Hsp60/Hsp10 folding machine, open new frontiers in the use of putative therapeutic properties of curcumin as a switch from cancer therapy to AD treatment.

### References

- [1] Campanella et al, *Cancer* 2015, 121: 3230-3239.  
[2] Marino Gammazza A et al. *Curr Pharm Des.* 2016, 22(26):4040-9.

### Key words

Protein-misfolding diseases, Alzheimer's disease,  $\beta$ -amyloid, tau, molecular chaperones, chaperonotherapy.