IMPROVEMENT OF ENZYMATIC PERFORMANCE THROUGH CHAPERONES

Researchers at the Center for Astrobiology (CAB, INTA-CSIC) have synthesized new proteins from the chaperone family that enhance the protection of enzymatic activity.

Enzymatic activities lose efficiency over time due to factors such as oxidation, structural instability under adverse conditions, or their natural decay. It is well known that chaperones and chaperonins protect enzymes from these effects by stabilizing their structure or aiding in the recovery of their native state.

The chaperonins from this invention are capable of **improving enzymatic reaction performance** by up to 100% on their own, meaning they do **not require other co-chaperone proteins for proper function**. Additionally, they maintain activity at temperatures where the enzymes would normally become inactive.

New proteins that enhance the performance of chemical reactions in industrial processes.

MARKET NEED

The chaperonins developed at CAB **address the problem of efficiency loss** with **greater effectiveness** than those currently available on the market.

ADVANTAGES

- Efficient protein folding, with enhanced stability and functionality.
- Increased enzyme lifespan, even at elevated temperatures.
- Adaptable to various substrates.

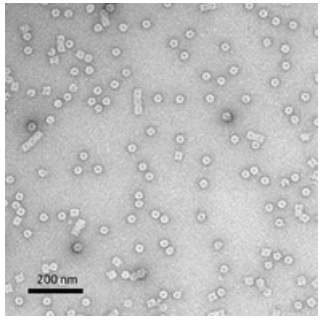

Figure 1. TEM micrograph of an hypothetical 2.5 Ga chaperonin.

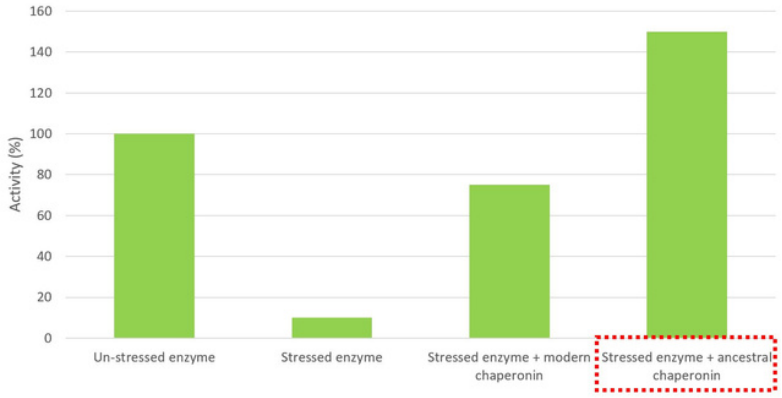

Figure 2. Effect of chaperonins on enzymatic activity (here lactate dehydrogenase).

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STAGE OF DEVELOPEMENT

- This technology is protected by a **patent application.**
- It is currently at **TRL 4.**
- **Collaboration** is sought to identify specific applications for the technology, as well as for potential **technology transfer** for certain uses.