

Abstract (EN)

Dinucleoside polyphosphates are already known for more than 50 years, but their role inside a cell is still unclear. Some theories discuss their possible role as alarmones during stress conditions, others connect them to DNA damage or proliferation. One new theory is that dinucleoside polyphosphates act as 5' RNA caps. To elucidate their role in organisms, it is important to know their concentration in normal and stress conditions. This work will try to determine basal concentration in both bacterial and eukaryotic cells, and the changes of their concentration under stress conditions, from already known data. Measurement of concentration of any compound inside a cell depends on the used method. I also present basic overview of methods for detecting dinucleoside polyphosphates, from older luciferase-based techniques to new precise mass spectrometry-based techniques.

Keywords: dinucleoside polyphosphates, Ap₄A, RNA caps, cellular stress, LC-MS detection and quantification