

The route from formamide to RNA and metabolism. Part II

R. Saladino¹, S. Pino², G. Costanzo³, E.Di Mauro²

Formamide chemistry provides a coherent and essentially complete set of basic precursors for the onset of pre-biotic processes. In the presence of formamide and of phosphates, nucleosides can be phosphorylated, resulting in both open and cyclic forms of nucleotides. The high-energy 3',5' phosphodiester linkages conserved in 3',5' cyclic nucleotides offer a genuine solution for monomer activation required by the transphosphorylation reactions that could lead to the emergence of the first simple oligonucleotides sequences on the early Earth. The reactions resulting in the generation of initial pre-genetic sequence complexity will be presented and discussed. These reactions may occur in formamide, in water, in dry. The energy source may be thermal or protonic (intended as mimic of Solar Wind). The resulting sequences are endowed of simple ribozymic activity. Such large spectrum of proto-environmental possibilities outlines a scenario compatible with proto-metabolism.

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¹ Dipartimento di Scienze Ecologiche e Biologiche University of Tuscia, Viterbo, Italy

² Dipartimento di Biologia e Biotechnologie “Charles Darwin” University “Sapienza” Rome, Italy

³ I.B.P.M. Istituto di Biologia e Patologia Molecolare, CNR, Rome, Italy