

'Reverse chemical evolution': Search for thermally stable peptides

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The primitive sea on Earth may have had high-temperature and high-pressure conditions similar to those in present-day hydrothermal environments. If life originated in the hot sea, thermal stability of the constituent molecules would have been necessary. We have proposed a novel approach, called reverse chemical evolution, to search for peptides, notably more stable against thermal decomposition than previously reported and might have acted as key molecules in the chemical evolution toward the origin of life (Mitsuzawa and Yukawa, 2003). The essence of the approach is that hydrolysis of a protein at high temperature and high pressure simulating the ancient sea environment may yield thermally stable peptides at higher concentrations than other peptides. In this presentation, we report the results obtained with ribonuclease A and several other proteins.

Reference:

Mitsuzawa and Yukawa (2003) *Origins Life Evol. Biosphere*, 33, 163-171.