INVESTIGATION INTO THE FORMATION OF PEPTIDE BONDS ON THE PREBIOTIC EARTH.
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Introduction: The 1953 Urey-Miller experiment attempted to simulate conditions thought to be present on the prebiotic Earth. These included the effects of lightning and electric field on the prebiotic earth's atmosphere. This and subsequent Urey-Miller-type experiments yielded five main amino acid products, but no peptides (short chains of amino acids) were formed. Since this original experiment, multiple components to lightning have been discovered, including ionizing radiation and strong electric fields, that were not considered in earlier experiments. With this new information, we have subjected several mixtures of amino acids found in the original experiments, as well as in meteorites, to novel combinations of gamma radiation, atmospheres, and electromagnetic fields. Such conditions are more representative of early Earth atmospheric conditions. This investigation probes the energetic processes of peptide bond formation between individual amino acids under prebiotic, Urey-Miller-like conditions.