Primordial Soup: Testing the Catalytic Properties of Clays on the Production of Different Biomolecules

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The purpose of this investigation was to find the catalytic abilities of clay, and to determine if clay could have served as a catalyst for the creation of biomolecules during the prebiotic-primordial Earth period. Thus, reinforcing the Theory of Spontaneous Generation, and giving a basis as to which non-organic chemical compounds gave rise to organic life. This investigation utilized six different clay types: bentonite (Al2H2Na2O13Si4P4 S3), kaolin (Al2H4O9Si2), illite (KAl2H3Mg2Fe2Al4O11Si4), sepiolite (Mg4H4O15Si6), and moroccan (NaCa3Al2O10Si4) and Talc (Mg3H2Si4O12). These six-clay specimens were autoclaved for sterilization, and were separately combined with equal parts ammonia water, sodium carbonate, sodium phosphate, and hydrogen peroxide. These reactants were placed in a 15mL sealed test tube and were given a water bath at 100 degrees Celsius for 20 minutes. The resulting product(s) were then analyzed via UNICO Spectrophotometer model S2150UV from a 190nm to 1100nm wavelengths to determine the absorbance. The spectrophotometric data was then analyzed and compared against lab-grade biomolecules: carbohydrates, lipids, and amino acids. Furthermore, the Biuret test and Benedict's Solution tests were conducted for a qualitative analysis. This investigation is beneficial, when researchers look to analyzing foreign planets. If these specific clays are found with the other reactants utilized in the experiment, then spontaneous generation could have occurred and given rise to biomolecules. Furthermore, a better understanding as to the origin of life can be attained.

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