CONTROL ID: 2251236

TITLE: Why Interstellar Ices Can Be Considered As Precursors For Prebiotic Chemistry

ABSTRACT BODY:

Abstract Body: Interstellar ices made of simple molecules (H_2O, CO, CO_2, CH_3OH, NH_3, CH_4…) are abundant species observed in molecular clouds where stars and planetary systems form. Since the constitutive elements (H, O, C, N, S, P) are the most cosmically abundant and condensible, they favor the making of ices on grains. In the mantles formed, a rich organic chemistry develops, thanks to the protective nature of the grains. This chemistry leads to a high complexity. Radical chemistry generated by photo/thermo-chemical processes on the surfaces, leaves to the formation of organic residues as those produced in our laboratory using ice *templates,* and further studied, using methods that pertain mostly to analytical chemistry. The organic material formed may resemble the Soluble Organic Matter observed in pristine meteorites. From numerous amino acids [1], aldehydes and sugars [2] detected in these residues to chiral molecules and enantiomeric excesses produced by Vacuum Ultra-Violet Circularly Polarized Light from synchrotron radiation [3], one might seriously ask whether the chemistry of molecular clouds out of which stars, planetary systems and debris form, may not be seriously considered as the precursor of prebiotic chemistry in a given environment such as the surface of a telluric planet. I will present the general frame of these experiments in relation to the possibillity of feeding of the necessary prebiotic chemistry for the origin of life. Certainly, prebiotic chemistry is very different in itself than astrochemistry but the starting bricks issued from astrochemistry may well be necessary for the possibility of the emergence of life on planets under certain assumptions I will briefly discuss.

REFERENCES

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[3] Modica, P., Meinert, C. de Marcellus, Nahon, L., Meierhenrich, U.J., Le Sergeant d'Hendecourt, L. Astrophys.J, 788, 79

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