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CURRENT STATUS OF ORGANIC ANALYSES OF ANTARCTIC CARBONACEOUS CHONDRITES

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Antarctic meteorites having been known since 1969 now number about 17000 pieces of which 8985 belong to Japan, 7645 to U.S.A., and 503 to EUROMET. These meteorites include carbonaceous chondrites that contain organic compounds of extraterrestrial origin.

Some of the carbonaceous chondrites are available for organic analyses, and we have analyzed

1) bulk carbon and nitrogen contents (wt.%) and carbon isotopic compositions ($\delta^{13}C_{PDB}$) in 25 chondrites
2) amino acids in Yamato-74662, Yamato-791198, Yamato-793321 and Belgica-7904
3) monocarboxylic acids in Y-74662 and Y-793321
4) dicarboxylic acids in Y-791198 (and Murchison)
5) aliphatic and aromatic hydrocarbons in Y-74662 and Y-793321
6) nucleic acid bases in Y-74662, Y-791198, Y-793321 and B-7904, and
7) acid-insoluble organic matter in Y-74662, Y-791198, Y-793321, Y-82162, Y-86720, and B-7904 (and Murchison).

Although carbon contents vary from min. 0.67% in Y-86720 to max. 2.36% in Y-82162, only Y-74662 and Y-791198 (and Murchison) yielded solvent-extractable organic compounds. The most abundant class of compounds was dicarboxylic acids with oxalic acid 1900 nmol/g in Y-791198 (2100 nmol/g in Murchison) and the least was purine with 2.8 nmol/g in Y-74662.

The insoluble organic matter has thermally labile organic compounds which numbered about 130, mostly aromatic hydrocarbons, in Y-791198 (about same number and kinds in Murchison) and similarly in Y-74662. However, the other chondrites yielded only small compounds in number and amount.

Our simulation experiments produced a similar feature to that found in some organic compounds in the chondrites.