

# Trending science: Vitamin B3 may have been delivered from space

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The results of laboratory experiments involving Vitamin B3 by a team of NASA researchers support a theory that the origin of life may have been assisted by a supply of 'biologically important molecules produced in space and brought to Earth by comet and meteor impacts'.

The new work, published last month online in *Chemical Communications*, follows earlier research by the team which revealed that vitamin B3 was present on 'carbon-rich meteorites at concentrations ranging from about 30 to 600 parts-per-billion'. In that work, the team performed experiments that showed vitamin B3, which is found in foods such as fish, peanuts and sunflower seeds, could be made from an organic molecule called pyridine in carbon dioxide ice under conditions that simulated the environment in space.

The new experiments went further by adding [water ice](#) to the mixture and using amounts closer to what is expected for interstellar ices and comets. NASA reports that the team found that even with the addition of water, the vitamin could be made under a wide variety of scenarios where the water ice abundance varied by up to ten times.

Study author, Karen Smith of NASA's Goddard Space Flight Center in Greenbelt, Maryland noted, 'This result suggests that these important organic compounds in meteorites may have originated from simple molecular ices in space. This type of chemistry may also be relevant for comets, which contain large amounts of water and [carbon dioxide](#) ices. These experiments show that vitamin B3 and other complex [organic compounds](#) could be made in space and it is plausible that meteorite and comet impacts could have added an extraterrestrial component to the supply of vitamin B3 on ancient Earth.'

According to iflscience, the results have implications for the origins of life on Earth, because many structures essential to metabolism rely on vitamin B3. The website notes, 'It might be possible that vitamin B3 from space helped to fast-forward the formation of life on Earth, and this could have implications for how life may form on other planets.' Indeed, Perry Gerakines of NASA Goddard says that the experiments, which are part of broad research programme in the field of Astrobiology at the organisation, demonstrate an important possible connection between the [complex organic molecules](#) formed in cold interstellar space and those we find in meteorites.

The authors are now looking closely to the information that the European Space Agency's (ESA) Rosetta mission, currently in orbit around Comet 67P/Churyumov-Gerasimenko, is returning. Rosetta's observations could help to further substantiate the team's theory, as Smith noted, 'Rosetta could help validate these experiments if it finds some of the same complex organic molecules in the gases released by the

comet or in the comet's nucleus.'

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