

'Red rain from outer space' - Prof. Chandra Wickramasinghe

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The Nation, Sri Lanka
Sat, 15 Dec 2012 12:55 CST

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The peculiar 'red rain' is a novel phenomenon for Sri Lanka. The Medical Research Institute said it contained some kind of algae. And very recently, Industrial Technology Institute also announced that it contains heavy elements such as arsenic and silver. Is it possible these elements to enter the atmospheric clouds? What kind of algae is it?

What is the real reason for such an event?

The Nation had an opportunity to ask the said questions from the principal investigator, who studied the red rain occurred in Kerala some years ago, a Sri Lankan-born British astrophysicist and astrobiologist, currently the Director of the Buckingham University Centre for Astrobiology, Prof. Chandra Wickramasinghe.

Q. How would you explain the red rain phenomenon recently occurred in Sri Lanka?

We haven't investigated red rain in Sri Lanka yet, but I have been very closely involved in the red rain studies in Kerala, southern province of India. This took place in 2001 and 2008. Samples of that red rain were sent to me for investigation. I had a big team of investigators working with me. Although we were in possession of the samples for several years we have still not identified what sort of organism it is. It's a living organism, we have been able to replicate it and we found that it multiplies in a temperature up to 120^oC at least, perhaps more than that. I think this is a very strong case that micro organism from space made their way down to the Earth with the red rain. These organisms had probably originated in a comet or a piece of a comet that exploded in the atmosphere. This is my conclusion for the red rain in Kerala.

Sri Lanka's red rain looks similar to that of Kerala. The Medical Research Institute (MRI) says that the organisms are similar to fungal, algal organisms of earth. But I believe that the shape is the only similarity. The conclusion had not been made based on any genetic or DNA studies. But the similarity of the organism to anything on the Earth does not mean that it came from the Earth. If life originally started from the Earth then to find living organism coming from space would be very strange. There is a long culture of belief that life started on the Earth. If that is true, we have to find some explanation, which is earth based. I am sure that if life did not start on the Earth it came from space.

Samples of Kerala red rain were sent to Cardiff and I organized investigations by scientist in the US, Sheffield in the UK and also in Cardiff. We have to derive DNA from the samples. The red

color is due to pigmented red cells. That looked like algae, normally found in water and soil on the Earth. It is easy to look through the microscope and say it came from the Earth and was blown upward and got into the clouds and water condensed around these cells. There are many problems with this hypothesis; the first problem is physical or mechanical. Million of tones of these red cells had to be lifted to the clouds from the surface of the Earth.

Tornado-like atmospheric events could do it, but normally you would not expect that much of biological materials to lift to the clouds in the troposphere and then come back down. That's one mechanical problem. The other is that we still have not identified these organisms in the red rain in Kerala with any known earthly organism. When we try to study the DNA it doesn't show up in any recognizable form. So it is a mystery. The point is that it could be from a different planet or different cosmic environment. This is the most likely explanation.

If it came from space, it could have arrived at the Earth via a comet. We know that meteors and bits of comets fall from the sky and burn up on entering the atmosphere. But a large enough piece could have contained living organisms of red cells.

Q. Have you studied other similar phenomena except the Kerala red rain?

I think there was a report on red rain in Brazil or South America, but no one has collected any samples and no one has seriously studied it. When the red rain in Kerala happened in 2001, it was thought to have been desert dust from the Sahara. But the

difference between dust particles and living cells are very obvious. Red rain cells have cell walls and internal structures, it is certainly not dust. Then next possibility is blood cells from bats. That is a bizarre hypothesis, so we have to look for some other explanation.

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Prof. Chandra Wickramasinghe

Q. Is this a rare occurrence?

It became common only recently. The Kerala red rain made headlines and then the Sri Lankan red rain. It hasn't been talked about but it doesn't mean it has not happened. If you have small showers of pinkish rain people tend to ignore it. However the Sri Lanka rain was very red. But historically there have been stories of blood falling from the skies. Even in the *Bible* rain of blood has been talked about. I think it has happened in the past.

Q. Have you observed any astronomical phenomenon related to red rain?

Correlation has been noticed. There are regular meteor showers. During a meteor shower the Earth goes through a debris trail of a comet. Comets go around the Sun, leaving dust and big chunks of comet. It's like a tube around the sun. Every year the Earth crosses the tube or comet debris. These are what are referred to as meteors. They go through the atmosphere at high speed and burn up. If there are large enough fragments, they explode in the atmosphere. If they have living cells, they could disperse in the earth's atmosphere. Coincidentally the Sri Lankan red rain also happened in November, a time meteor showers frequently

occur. It could be a larger than normal chunk of comet that intercept the earth over Sri Lanka, and deposited the spores in the local clouds.

Q. Have you found any organisms in meteorites found on the earth surface?

Not personally, but meteors called carbonaceous chondrites are relics of comets that have been considered as life-carriers for decades. Each time a comet goes round the sun it loses volatile material, water evaporate and if there were life inside the comet it would become compressed and fossilized in the carbonaceous meteoroid. These carbonaceous meteorites have been studied in 1950s by a group of American geologists, who found amazing carbonaceous structures inside them. They looked like algae cells or bacterial cells. They published their results, but unfortunately some of them were contaminated. Consequently they were readily rendered inadmissible. They didn't like to take any notice of it. Again because of cultural reasons they did not want to admit the possibility of life starting from outside the Earth.

Then in the 1980s, a German geologist contacted me claiming that he had evidence of fossils of uncontaminated meteorites. Deep inside the meteorite he found carbonaceous material. It was irrefutable evidence. But the scientific community simply ignored it. After about 20 years in 2001, a small group from NASA Marshall Space Centre looked at the same sample again and the results were published. It was again ignored. It doesn't fit the paradigm, the philosophy. The head of the NASA group was under pressure from the administrator to hush it up. He was told

that any reports of alien life has to come from the American Security Forces and has to be informed before any such announcement was made.

Carl Sagan has said that extraordinary hypothesis need extraordinary evidences to defend them. Life coming from space is an extraordinary hypothesis and therefore requires extraordinary evidence to support it. I would argue that the extraordinary hypothesis is that life is confined to the Earth. According to this argument, life first started on the Earth four billion years ago. That life could not have been confined to the Earth because over the four billion years of earth's history our planet has been hit by meteoroids, comets, asteroids; once about 50 million years ago a huge impact that also resulted in the death of the dinosaurs nearly destroyed life on the Earth. Such events probably resulted in the surface material from earth jettisoning to space. So, other planets and the whole the galaxy would have been infected by earth life already. If life started from the Earth, the biosphere of the Earth is not confined to it but extends throughout the entire galaxy.

Consequently I think life is a truly cosmic and galactic phenomenon. On the other hand, life might not have started on the Earth it could have been brought here from outer space. On average hundreds of tones of comet debris lands on the Earth in a single day. We have to consider the possibility that these cells are coming from space.

Research papers have been published in peer review journals to this effect. That is an amazing paradigm shift, accepting that life

is not an earthly phenomenon. People have been very reluctant to follow that line of thinking because for a long time we have been used to thinking that life is something confined to the Earth. Maybe the whole universe is involved in making the first life.