

Molecular approach to the characterisation of Sri Lanka red rain cells Molecular approach to the characterisation of Sri Lanka red rain cells

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The recent mysterious phenomenon that has attracted much attention is that of the red rain which fell in Polonnaruwa, Sri Lanka, on 13 November 2012. The microbial content in red rain shows generic similarities to that of the Indian red rain which fell in 2001. The morphological property of those microbes has been well documented [1,2]. Various microscopic analyses of our Sri Lankan red rain sample indicate that the defining red rain cells (RRC) exist in the presence of other microorganisms including diatoms. In our past paper, the ultrastructure of RRC shows that it is possibly a spore-form and so allowing them to thrive in the extreme upper biosphere conditions [3]. We also show the presence of uranium in the abnormally thick cell wall of RRCs.

In this report, we present the molecular approach to the characterisation of microbial communities in red rain and reveal the genus of RRCs. A beads-beating protocol is carried out for the efficient extraction of DNA and denaturing gradient gel electrophoresis (DGGE) for the analysis of microbial communities.

References

- [1] Louis and Kumar (2006) New red rain phenomenon of Kerala and its possible extraterrestrial origin, *Astrophysics and Space Science*, **302**, 175-187.
- [2] Samaranyake et al. (2013) Microorganisms in the coloured rain of Sri Lanka, *Journal of Cosmology*, **21**, 9805-9810.
- [3] Miyake et al. (2013) Discovery of Uranium in Outer Coat of Sri Lankan Red Rain Cells, *Journal of Cosmology*, **22**, 1-8

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