

Interactive comment on “Brief communication: Extended chronology of the Cordón Caulle volcanic eruption beyond 2011 reveals toxic impacts” by Werner Thomas Flueck

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The work is interesting and shows once again the influence of fluoride on biological systems. Although tephra contact with water does not release fluoride, it may be that certain compounds containing fluoride, in contact with biological structures, transform into products with higher activity. A well-known case is that of monofluorophosphate, a covalently containing fluoride compound, where fluoride is not detected by traditional techniques, such as potentiometry. However the contact of monofluorophosphate with enzymes such as alkaline phosphatase, lead to the release of fluoride with biological effects. Tephra exposure to various biological environments could broaden understanding of the phenomenon. While there is little information, fluorine poisoning by airborne

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particles is documented, especially in vegetables. Perhaps this may be a case, due to the high temperatures that are exposed volcanic rocks. Measures air fluoride could give interesting results. Fluoride can form volatile compounds such as HF. Even in very low proportions can lead to high intakes of fluoride. There is no such data. However, an estimate in humans leads to the conclusion that a concentration of 400 ug/m³ could produce a significant fluorosis. Coexistence of fluoride with aluminium, for example, is undetectable by direct potentiometric methods, but not to the methods involving distillation. However, even distillation has been ineffective in some cases to release fluoride from complex samples, where fluoride seem to be bound by covalent acidic resistant bonds.

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