Your Name

Instructor Name

Course Number

Date

**Alien Life- Out of This World**

**Introduction**

A meteorite is basically a solid piece of any given debris from an object that can be an asteroid, comet and also meteoroid. These meteorites basically originate in the outer most space and also it survives its entire passage through the atmosphere in order to reach the surface of a planet that also includes Earth. It is basically a fragment of iron or rock from the outer space and it can quite effectively impact the surface of the Earth. These are thought to be originated in the asteroid belt which is present between the planets of both Jupiter and Mars. The size of the meteorite can vary starting from less than a gram to more or less than 60 tons. There are times when the path of these meteorites objects intersects with the orbit of the Earth and at that time they enter the atmosphere of the Earth at a very higher velocity by effectively causing the luminous phenomena which are commonly called a shooting star and also meteors. There are some other types of meters which are quite bright and they are known as the fireball and they can also be called as bolide if they are linked with detonations and also smoke trains. These events are considered a tremendous force of nature and they can also cause considerable property damage and also health risks to the people (Meslier).

**Tasks**

The organic compounds that are extracted from the meteorites are very important because these organic compounds hold clues to the beginning of life on the Earth. The water that is present on the asteroids reacts with the rocks in order to form these organic compounds and these are some of the very crucial and important compounds which sparked life in the Earth’s primordial oceans some 4 billion years ago. These meteorites when strike the Earth then various changes occur in the Earth atmosphere along with changes in the microbial community. It has also been noticed that that once the meteorites hit the Earth then it changes the temperatures of the Earth and due to this change in temperature in Earth atmosphere various disasters take place like lava eruption and volcanos etc. Along with these changes various disease eruption also takes place and one of the reasons of this possible disease eruption is due to the changes in the entire microbial community. Over the past few years, many studies were followed in order to develop the idea that what kind of microbial communities develop over the period of the time when the meteorites strike the Earth and more specifically in the fresh volcanic material that erupts right after the meteorites strike the Earth (Tait).

The main and fundamental goals of this research were to identify the primary organisms to colonize lava flows after the eruption and also to identify the changes in the overall community structure with the passage of time. The cooled lava flows often represents sterile environments. The data that is available from the past researches on the microbial community of the meteorites suggest that the composition, the survival rate and also the mode of reproduction of these microbes are quite different as compared to the microbial communities of the Earth and also it has been suggested that the DNA composition and the overall genetic composition is highly different as compared to the microbial communities that are present on the Earth crust (Wierzchos). Also there are high chances that these microbial communities can be highly fatal for the human population on Earth, therefore, it is highly recommended by the scientific community to deal with these microbes very carefully and with high precautionary measures because so far it is not fully known that what kind of disease they can cause in humans if there are any (Tait).

The possibility that the microbial community from these meteorites can have a harmful effect on the animals and also the overall human population is not proved yet but even then the scientists from all over the world agree with the fact that these microbes can cause diseases like skin cancer and also some respiratory issues. Therefore while collecting samples from the meteorites it is very essential to cover the entire body so that any direct interaction with the microbial community of the meteorites is avoided. Most of the scientists suggest that these microbes that belong to the meteorites are completely novel because of the fact that the meteorites have a composition that is totally different from the Earth. However few water traces have been identified on the meteorites and due to these water traces, the microbes from these meteorites can survive on the Earth atmosphere without having much trouble. Having said that till date no such resemblance was found between the meteorites and the Earth environment. Due to all these possibilities it is highly suggested by the scientific community to be extra careful when any such meteorites strike the Earth surface because besides affecting the Earth and its population indirectly it can also cause some direct effect on the human and also animal population (Glavin et al.,).

**Sample Material**

The sample material was collected from the site area where recently the meteorite hit the Earth. So I and my entire team went to the site with all the precautionary measures we were supposed to take and then we set off to the area. For our study, we selected a single piece of this meteorite that hit the Earth and once the sample was taken it was weighed and its weight was 2.2g.

**Experimental Study Design and Methods.**  
 Once the sample was collected it was then taken to the lab in order to identify it under a microscope. It was first inspected properly under the microscope in order to properly examine its appearance and physical characteristics. Under the microscope, many amber-colored globules were noted in this steroids. After the microscopic analysis, it was then processed for its amino acid determination. Both the amino acids and also the enantiomer ratios were investigated independently in the meteorite samples. The analysis was done by using similar extraction procedures and also analysis by the HPLC which was then coupled with o-phthaldialdehyde-N-acetyl-L-cystine derivation and also UC-florescence detection. Single parts of the meteorites were crushed into a powder form with an annealed that was kept at 500° for overnight mortar and pestle in a positive pressure that was 1-μm filtered air clean room and after that, they transferred into clean vials. The meteorites were fine-grained therefore they did not require any type of crushing before the analysis.

Another part of the sample was closed in a sterilized and clean test tube with about 1ml double distilled water and then this was boiled for about 24 hours in a bloc\k heating set for about 24 hours at 100°C. The test tubes in which the samples were present were cooled at room temperature and then the outside of these test tubes was rinsed with 95% ethanol along with double distilled water. The test tubes were then opened and they were centrifuged for about 5 minutes in order to separate the particulate H2O supernatant. From this entire supernatant, about 10% was taken and it was then transferred into a new test tube which was dried under the vacuum and then it was desalted by7 using carbon exchange resin before HPLC analysis in order to determine the free amino acids linked with the bulk samples. The leftover supernatant was then transferred into a different test tube and it was then analyzed for the presence of any bulk amino acids in the sample matrix. Once the amino acid was determined and analyzed the samples were prepared for sequencing, PCR and genomic identification.

**Results**

The analysis of the samples determined that the amino acids were present mainly in the 6M HCl hydrolyzed with hot water extract. The most important amino acids that were determined in these samples were the glutamic acid and also glycine although some lesser amount of aspartic, serine and alanine were also identified. These amino acids that were identified in the meteorites were somehow similar to the amino acids present on the Earth Crust. Along with that, the genomic identification showed that the DNA and also the sequences of the samples from the meteorites was quite different from the Earth samples and it was shown that no native of this sample was present on the Earth atmosphere before. Some carcinogenic effects of the sample were also identified which showed that part from having indirect health hazards to the population of Earth these meteorites can also affect the Earth population directly by causing various diseases directly.

Work Cited

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