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Topical white paper

<http://s.alchemer.com/s3/Call-to-the-Biological-and-Physical-Sciences-Community-White-Papers-Topical>

Cover Letter

Following to your announcement entitled :

Call to the Biological and Physical Sciences in Space Community for White Papers

THE NATIONAL ACADEMIES OF SCIENCES-ENGINEERING-MEDICINE

I am honoured to write you in view to publish my white paper entitled :

YEAST TO GET OXYGEN AND TO FEED PLANTS ON OTHER PLANETS

In waiting for a favourable response want, to accept my best greetings.

Signed : The author :

Miss Nouara Tinakiche

YEAST TO GET OXYGEN AND TO FEED PLANTS ON OTHER PLANETS

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Abstract: In this work, we are interested to certain processes which conduct through the properties of YEAST and specific chemical reaction to the production and the release of oxygen. Oxygen is very important to realize the objective of space life for human being and plants. The use of YEAST in space laboratories will in other hand allow the photosynthesize on other planets which leads to a possibility of growing plants in space laboratories and on other planets.

THE WHITE PAPER/

MOTS CLES/Life in space, yeast , plasmas and recombination, reactions giving oxygen

§1-Introduction:

Our aim is therefore to create in space a suitable environment to allow life for us and plants on other planets.

a-First, we will believe to find a process to get oxygen .

b- then, produce water in space laboratories

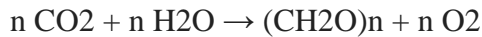
c- Finally, we have to think over plants which need CO_2 , O_2 and water too.

This work is consecrated for the realize of a possible space experience in which we propose to use YEAST and its properties to produce the gas of oxygen O_2 . So we will use YEAST which converts CARBOHYDRATES [2] into CO_2 and alcohol . The CO_2 reacts with water H_2O contained in our device to release the gas of oxygen O_2 using the energy coming from a source of light - In this way, YEAST could be used to feed plants with CO_2 and allows the photosynthesize on other planets . The alcohol given from the reaction of YEAST with sugar or a carbohydrate in WARM medium and in the presence of a particular acid could give water. Such reaction feeds then plants with water also.

§2-The description of the experience and the reactions:

In our device we use YEAST which converts CARBOHYDRATES (such natural and processed food, flour, sugar....) into CO_2 and alcohol as in the fermentation process. The CO_2 reacts with water H_2O contained in our device to release the gas of oxygen

O₂ using the energy coming from a source of light (electric lamps as in photosynthesis) according to the following reaction :



YEAST could be used to feed plants with CO₂ and allows the photosynthesis on other planets . The alcohol produced from the reaction using YEAST could lead to water through a specific reaction and like this we will obtain from the properties of YEAST what it is needed for us and plants as water, oxygen , and co₂ to live in space.

Therefore, we exploit The alcohol given from the reaction of YEAST with sugar or a carbohydrate in WARM medium (we can heat with electric lamps or other heat source) and in the presence of an acid we could obtain water. Such reaction feeds plants with water also.

IMPORTANT:

We can use also the sea water which is composed of 34% of Oxygen ,
1.8 % of CARBONIC DIOXID and 64% of Nitrogen.

§3-Second method to provide oxygen in space:

In the second method I propose to ionize the CO₂ gas by a discharge process and heating as in the production of plasmas. Like this we obtain separated Oxygen and carbon ions. The oxygen gas O₂ can be obtained by recombination by decreasing temperature. This plasma device is related to an other room where we have put plants in a such a manner to receive the oxygen in this room and feed plants and the crew. This is possible because of the low pressure in this room compared to the pressure in the plasma device. This low pressure will in this way allow the recombination to get the gas of OXYGEN O₂. In the contrast and in the principal, the carbon will stay in the plasma device.

§4-CONCLUSION

In this work , we have investigated the chemical reactions and the properties which involves YEAST to find a mean to produce what it is needed for us and plants as water, oxygen , and co₂ to live in space. We have proposed the chemical reactions to get oxygen from YEAST and how to produce CO₂ and water through a reaction with a specific acid. We have described also an other experience to get oxygen from Plasmas containing oxygen ions. The verification of this theoretical work could be done IN SPACE and on a shuttle to carry out the benefits of using YEAST and PLASMAS in this way to allow space life for us and Plants.