

# Fulvic Acids as IgG Antibodies Multiplication Support

Navarrete JM<sup>1\*</sup>, Morales OY<sup>1</sup> and Zúñiga MA<sup>1</sup>

<sup>1</sup>Faculty of Chemistry, Inorganic and Nuclear Chemistry Department, National University of Mexico



## Abstract

Fulvic acids, as well as aminoacids, are well known by its great importance to maintain the metabolism in living matter, but fulvic acids are created by one very long oxidation process, after the metabolism of living matter has been interrupted, to create bigger molecules with greater reactive capacity than pure aminoacids. Till now, organic fertilizers have been used by its evident effect on agricultural crops, but fulvic acids effect on animals metabolism, particularly vertebrates, has been scarcely studied. In Mexico, have been produced fulvic acids for human consumption, using sugar as raw material, and the purpose of this paper is to insist, once again, on the direct influence of fulvic acids on animal vertebrates metabolism, particularly on the IgG antibodies multiplication support.

## Introduction

If metabolism is defined as the whole and continuous process of chemical reactions taking place in organic tissues, which preserve both vegetable and animal life, then it is concluded that organic acids, such as amino and fulvic acids, should be extremely important reactives to maintain living processes. If aminoacids is the term used to define organic acids which include  $\text{NH}_2$  in their molecules, then fulvic acids are produced by complete oxidation of organic matter, after long time its metabolism has been interrupted. So, both of them are natural organic acids in living matter, but fulvic acids dispose of greater number of active terminals in bigger molecules, which explains their use as soil fertilizer in agriculture since historical times. Therefore, if aminoacids have an important role in vegetal and animal metabolism, they might be associated with fulvic acids produced by long time dead organic matter. Then, this paper attempts to introduce the role of fulvic acids in vertebrate animals metabolism, once their importance as soil fertilizer has been very well known.

## Experimental

Ground fertilizers are so much as countries and types of soil, even when it is possible the synthetic, industrial production of them, by using sugar as raw material. In any case, it is possible the complete separation of fulvic acids from natural fertilizers, eliminating heavy metals and any other possible toxic compounds, if they are to be tested in human and animal species. So, fulvic acids industrially produced have been used in Mexico for human consumption, and their effect tested on the laboratory mice and rats immune system. The adopted procedure was to feed identically two groups of twenty mice and twenty rats, divided in four groups of ten each, but while one group drank pure water, the other group drank a solution of commercial Fulvi-H solution, authorized and sold in Mexico for human consumption. The mice total average weight was 35 grams, while rats total average weight was 350 grams, and the fulvic acids daily dose drank by mice and rats was 15mg/ml [1,2]. Also, the fulvic acids action on aminoacids absorption by vegetables was tested, by using two poblano chili crops in presence and absence of Fulvi-75 organic fertilizer 1mg/ml, both irrigated with same volume of 15 aminoacids labelled with total 11,1d/m-ml of  $^{14}\text{C}$  solution, Perkin Elmer Product [3].

## Results

If the idea or presunction that aminoacids are one very important factor to maintain the metabolism equilibrium in living organic matter, through continuous organic chemistry reactions, and fulvic acids are associated with them in some way, then the spontaneous

**\*Corresponding author:** Navarrete JM, Faculty of Chemistry, National University of Mexico, Mexico

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creation of antibodies IgG when some organic virus attacks it, is supported by the ingestion of fulvic acids filtered from digestive track to blood in animals, and from soil minerals to vegetable tissues, as it seems to show the results obtained when fulvic acids have been ingested by mice, rats and chili crop. So, the results obtained by ingestion of fulvic acids during two months by mice and rats are as follows, when Elisa method for antibodies IgG (mg/ml) and a light refractometer for total number of antibodies IgT (mg/ml) have been used [1,2]:

Number of mice: 9 (one mice was dead by fight)

IgG average with no FA (fulvic acids): 6.4mg/ml (std. dev. 4.5)

IgG average with FA (fulvic acids): 26.6mg/ml (std. dev. 11.1)

Increment IgG: 315%%

IgT average with no FA (fulvic acids): 60.8mg/ml (std. dev. 7,85)

IgT average with FA (fulvic acids): 70mg/ml (std. dev. 4.2)

Increment IgT: 15.1%

Number of rats: 10

IgT increment average with no FA (fulvic acids):67.5mg/ml (std. dev. 1.79)-66mg/ml (std. dev. 2.13)=1.5mg/ml (2,3%)

IgT increment average with FA (fulvic acids):70mg/ml (std. dev. 1.41)-64.3mg/ml (std. dev. 2.36)=5.7 mg/ml (8.9%)

In relation to fulvic acids and aminoacids absorption from the soil by vegetables, it has been found that 15 aminoacids at different concentrations (from glutamic acid 16.15% to metionine 0.73%), all of them labelled with <sup>14</sup>C, have been absorbed 2.76 times more (276%) if they are associated with fulvic acids in poblano chili crops [3].

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