UNIVERSIDAD NACIONAL MAYOR DE SAN MARCOS
FACULTAD DE CIENCIAS BIOLÓGICAS

LABORATORIO DE CONTROL DE CALIDAD DE ALIMENTOS, AGUAS y AMBIENTE.

REPORT Nº 378-2016

STUDY : Microbiological Analysis.

SAMPLE : **A. Guano island (Dust and feathers)**
B. Guano island inoculate with *Escherichia coli* ATCC 25922 y *Salmonella typhimurium* ATCC 3128 with retention time of one week at room temperature.
C. Guano island inoculate with Escherichia coli ATCC 25922 y *Salmonella typhimurium* ATCC 3128 subjected heat treated.

PRESENTATION : Vacuum packed bag x 650 g

RECEPTION DATE : Jun 20, 2016 TIME: 12:30

ANALYSIS DATE : Jun 21, 2016 TIME: 14:00

APPLICANT : SPRIND S.A.C.

ADDRESS : Calle Monte Rosa Nº 280 Ofic. 302- SANTIAGO DE SURCO.

I. RESULTS.-

	Sample A	Sample B	Sample C
Enumeration of *Escherichia coli*	< 3 MPN/g	< 3 MPN/g	< 3 MPN/g
Detection of *Salmonella sp.*	Absence/25g	Absence/25g	Absence/25g

---

1. Enumeration of *E. coli*. ICMSF. Vol. 1. 138-142. 2000.
2. Detection of *Salmonella*. ICMSF. Vol. 1. 172-174. 2000.

* According to the "Health Standard that establishes the Microbiological Criteria Health Quality and Safety for Food and Beverage Human Consumption". R.M. Nº. 591-2008 / MINSA.

II. INTERPRETATION.-

- The initial sample analyzed (A) lacked the presence of pathogenic microorganisms Salmonella sp and Escherichia coli.

- The inoculated and retention time of one week at room temperature (B) shows not provide favorable conditions for survival and multiplication of pathogenic microorganisms inoculated Salmonella typhimurium ATCC 3128 and Escherichia coli ATCC 25922. This is possibly because the guano is a primarily nitrogen compound, that the stay long exposed to the environment and in the presence of environmental microorganisms is subjected to a series of mainly oxidative enzymatic reactions which degrade the product and release simple components which can be used by other living as nutrients, in the form of ammonium nitrate Na, K and metallic elements organisms. These compounds produce a slightly acid reaction product, which limits the growth of pathogenic bacteria that are highly sensitive to acid pH; as they developed in neutral to slightly alkaline pH and also need energy for their growth and multiplication, that get more complex organic compounds such as glucose and peptone and not of simple compounds, such as those present in the guano of the islands.

- The sample inoculated with Salmonella typhimurium ATCC 3128 and Escherichia coli ATCC 25922 was subjected to a heat treatment at 75 ° C for 15 minutes (C), and showed no growth of pathogenic microorganisms after treatment

Lima, Jul 21, 2016.

U. N. M. S. M.
Lab. Control de Calidad Alimentos y Aguas
M.V. GERMAN VERGARAY ULFFE
DIRECTOR

UNIVERSIDAD NACIONAL MAYOR DE SAN MARCOS
FACULTAD DE CIENCIAS BIOLÓGICAS

LABORATORIO DE CONTROL DE CALIDAD DE ALIMENTOS, AGUAS y AMBIENTE.

ADDITIONAL INFORMATION TEST REPORT N° 377-2016 and Nº 378-2016

PROCEDURE MICROBIOLOGICAL ANALYSIS SAMPLE ISLAND GUANO

A. Analysis of *Salmonella sp. Escherichia coli* and the sample original.-

Microbiological analysis of the original sample, for detection of *Salmonella sp* was Performed and *Escherichia coli* and numbering according to the methodology described in the International Commission on Microbiological Specifications for Foods. ICMSF. 2000. Microorganisms in Food. Vol 1. Editorial Acribia. Inc. - Zaragoza.
The pH of the sample, which was determined 6.5

B. Guano island inoculated with *Salmonella typhimurium* ATCC 3128 and *Escherichia coli* ATCC 25922; with retention time of one week at room temperature.

A bacterial suspension was prepared in trypticase soy broth (TSB) strains of *Escherichia coli* ATCC 25922 and *Salmonella typhimurium* ATCC 3128, they were incubated at 35 ± 1 ° C x 18h.

Then dilutions 10^{-1} and 10^{-9} were made until the last two dilutions was inoculated 1 ml of each strain in petri dishes and were added to each plate 15 Plate Count Agar ml (APC), and incubated at 35 ± 1 ° C x 24-48 h. For *Escherichia coli* ATCC 25922 10^{-8} dilution average count 170 CFU / ml and *Salmonella typhimurium* ATCC 3128 was 100 CFU / ml was obtained.

Was added 1ml of inoculum obtained 10^{-8} dilution of each strain to a tube containing 10 ml of TSB in 100 g of sample and homogenized in a flask with a capacity of 500 ml and maintained for one week at room temperature. The final concentration was 1.7 CFU / g for *E. coli* and 1 CFU / g for *Salmonella typhimurium.*

C. Guano island inoculated with *Salmonella typhimurium* ATCC 3128 and *Escherichi coli* ATCC 25922 subjected to heat treatment at 75ºC for 15 minutes.

Samples inoculated with each strain were subjected to heat treatment at 75°C for 15 minutes and then analyzed according to the methodology described above (A) Detection of *Salmonella typhimurium* and *Escherichia coli* numbering.

U. N. M. S. M.
Lab. Control de Calidad Alimentos y Aguas
Dr. GERMAN VERGARAY ULFFE
DIRECTOR