**Methods**

The association between the over dispersed count outcome with excess zeros and the different treatmen group as predictor of macrophages infection was determined using a zero-inflated negative binomial (ZINB) model (30).

A ZINB model assumes that zero outcome is due to two different processes: in our model two processes are that a macrophages has been infected with Leishmania vs. has not been infected. If has not been infected, the only outcome possible is zero. If it has been infected it is then a count process. The two parts of the a zero-inflated model are a binary model, usually a logit model to model which of the two processes the zero outcome is associated with and a count model, in this case, a negative binomial model, to model the count process. The expected count is expressed as a combination of the two processes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Outcome: n.of Leishmania** | | |  |
| *Predictors* | *Coefficent* | *95%CI* | *p-value* |  |
| **Count Model (log-Mean)** | | | | |
| (Intercept) | 0.48 | 0.27 – 0.69 |  |  |
| group [AsaiapHM4] | -0.11 | -0.29 – 0.08 | 0.265 |  |
| group [AsaiaWSP] | -0.88 | -1.10 – -0.66 | <0.001 |  |
| group [Anfotericina] | -1.27 | -1.59 – -0.96 | <0.001 |  |
| **Zero-Inflated Model (log-odds)** | | | |  |
| (Intercept) | -2.12 | -3.90 – -0.33 |  |  |
| group [AsaiapHM4] | 0.90 | -0.28 – 2.08 | 0.135 |  |
| group [AsaiaWSP] | -0.79 | -4.29 – 2.72 | 0.660 |  |
| group [Anfotericina] | 1.12 | -0.28 – 2.53 | 0.118 |  |

Interpretation:

**Count model:**

Respect to the control group ( macrophages exposed only to Leishmania)

we observed a “not significant” decrease of mean number of Leishmania by 0.11 in AsaiapHM4 group, a “significant” decrease of mean number of Leishmania by -0.88 in AsaiaWSP group and finally a “significant” decrease of mean number of Leishmania by -1,27 in Amphotercin group. (panel A of fig)

**Zero-inflation model:**

Respect to the control group ( macrophages exposed only to Leishmania)

the Odds Ratios for macrophages to being among those who never are infected from Leishmania vs to being infectd were not significant in all group of treatment. (Panel B of fig.)

ZINB a 24h

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Outcome: n.of Leishmania** | | |  |
| *Predictors* | *Log-Mean* | *95%CI* | *p* |  |
| **Count Model (log-Mean)** | | | | |
| (Intercept) | 0.66 | 0.52 – 0.81 | <0.001 |  |
| group [AsaiapHM4] | -0.04 | -0.20 – 0.12 | 0.601 |  |
| group [AsaiaWSP] | -0.14 | -0.31 – 0.02 | 0.080 |  |
| **Zero-Inflated Model (log-Odds)** | | | |  |
| (Intercept) | -1.32 | -1.87 – -0.78 | <0.001 |  |
| group [AsaiapHM4] | 0.28 | -0.18 – 0.75 | 0.230 |  |
| group [AsaiaWSP] | 0.22 | -0.26 – 0.70 | 0.365 |  |