*Environmental Health Perspectives* doi:10.1289/ehp.1408097

## Supplemental Material

# A Prospective Study of Growth and Biomarkers of Exposure to Aflatoxin and Fumonisin during Early Childhood in Tanzania

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## Sample size calculation

Sample size was calculated according to the formula by Daniel, (1999) cited by Naing *et al.* (2006) as follows: - $n = [Z^2 P(1 - P)]/d^2$ whereby; n = sample size, Z = Z statistic for a level of confidence; (1.96 at confidence level of 95%), P = 0.9 (According to earlier study by Kimanya *et al.,* (2008) which found that 10% of infants consumed maize contaminated with both aflatoxins and fumonisins) and d= 0.05 as precision is 5%. Therefore, n=1.96 x 1.96 x 0.9(1 - 0.9)/0.05 x 0.05=138. Assuming 20% possible drop out rate, sample size was adjusted to n= 138+(20/100*138)=166. It was also expected that a group of 166 children with collection of biomarker samples for analysis of mycotoxins exposure and taking growth measurements for 3 surveys would provide a reasonably large number of samples even after dropouts.

## Reference

Naing L, Winn T, Rusli B. 2006. Practical issues in calculating the sample size for prevalence studies. Archives of Orofacial Sciences 1(1): 9-14.

**Table S1.** Types of foods consumed and estimated average intake (g/kg body weight unless otherwise indicated) by all children at recruitment according to village.

| Type of food | Nyabula village | Kigwa village | Kikelelwa village |
|---|---|---|---|
| Rice | 4.5 | 5 | 2.5 |
| Potatoes | 0.6 | 2.1 | 9.1 |
| Vegetables | 8.7 | 6.1 | 4.4 |
| Green banana | 0 | 0 | 13.8 |
| Beans | 3.5 | 3 | 4.4 |
| Meat | 3.9 | 5 | 4.3 |
| Fruits | 0.5 | 1.4 | 0.9 |
| Wheat | 0.7 | 0.4 | 1.6 |
| Cassava | 0.1 | 0 | 0.1 |
| Finger millet | 1.2 | 0.9 | 0.8 |
| Milk[a] | 7.5 | 5.2 | 15.9 |

[a]Unit is in mL/kg body weight.

**Table S2.** Estimated average maize intake by sampling time and village (g/kg body weight/day, mean ± SD).

| Sampling time | Nyabula | Kigwa | Kikelelwa | All villages |
|---|---|---|---|---|
| At recruitment | 10.6 ± 4.3* | 7.8 ± 4.1 | 7.7 ± 4.5 | 8.8 ± 4.5 |
| 6 months after recruitment | 12.1 ± 5.8* | 8.9 ± 5.8 | 7.9 ± 3.6 | 9.8 ± 5.4 |
| 12 months after recruitment | 13.4 ± 4.5 | 12.9 ± 4.8 | 9.9 ± 5.7* | 12.0 ± 5.3 |

*At recruitment, maize intake was significantly higher at Nyabula than other villages ($p < 0.01$); at six months from recruitment this intake was higher in Nyabula than Kikelelwa ($p < 0.001$) and Kigwa ($p < 0.01$) while at 12 months from recruitment, the intake was statistically lower at Kikelelwa than Nyabula ($p < 0.01$) and Kigwa ($p < 0.05$).

**Table S3.** Percent of children consuming groundnuts during the previous week before each sampling time.

| **Days per week** | **Nyabula** | **Kigwa** | **Kikelelwa** |
|---|---|---|---|
| **At recruitment** | | | |
| 0 | 81 | 68 | 79 |
| 1 to 3 | 13 | 2 | 5 |
| 4 to 7 | 6 | 30 | 16 |
| **6 months from recruitment** | | | |
| 0 | 87 | 68 | 85 |
| 1 to 3 | 4 | 24 | 7.5 |
| 4 to 7 | 9 | 8 | 7.5 |
| **12 months from recruitment** | | | |
| 0 | 77 | 22 | 75 |
| 1 to 3 | 11 | 65 | 17 |
| 4 to 7 | 12 | 13 | 8 |

**Table S4.** Percentile distribution of geometric mean levels (95% CI) of AF-alb (pg/mg) and UFB1 (pg/mL) by village and sampling time.

| Sampling time and village | AF-alb 2.5th percentile | AF-alb 50th percentile | AF-alb 97.5th percentile | UFB1 2.5th percentile | UFB1 50th percentile | UFB1 97.5th percentile |
|---|---|---|---|---|---|---|
| **At recruitment** | | | | | | |
| Nyabula | < LOD | < LOD | 8.2 (4.3, 15.4) | 72.8 (52.8, 100.5) | 202.4 (177.1, 231.3) | 842.4 (653.9, 1085.3) |
| Kigwa | < LOD | 5.8 (5.1, 6.5) | 16.5 (12.6, 21.7) | 115.8 (29.5, 455.2) | 253.7 (207.6, 310.1) | 1297.7 (944.2, 1783.6) |
| Kikelelwa | < LOD | 3.2 (3.1, 3.3) | 9.5 (6.7, 13.5) | < LOD | 87.6 (68.7, 111.8) | 579.0 (421.0, 796.3) |
| **6 months from recruitment** | | | | | | |
| Nyabula | < LOD | 6.4 (5.2, 7.9) | 65.4 (47.3, 90.2) | 27.1 (1.0, 696) | 111.1 (92.1, 133.9) | 469.9 (350.4, 630.1) |
| Kigwa | < LOD | 20.4 (16.0, 26.0) | 110.5 (72.1, 169.4) | 30[a] | 150.6 (114.9, 197.3) | 811.6 (486.2, 1354.9) |
| Kikelelwa | < LOD | 3.2 (3.1, 3.2) | 7.4 (5.3, 10.2) | < LOD | 40.9 (32.6, 51.4) | 229.2 (165.4, 317.6) |
| **12 months from recruitment** | | | | | | |
| Nyabula | < LOD | 13.4 (12.2, 14.6) | 35.9 (26.9, 47.9) | 79.0 (67.2, 92.8) | 343.6 (263.0, 448.9) | 2437.0 (1841.2, 3225.6) |
| Kigwa | 13.8[a] | 23.4 (19.7, 27.7) | 104.7 (66.7, 164.2) | 126[a] | 357.1 (279.7, 456.0) | 1448.1 (1089.6, 1925.1) |
| Kikelelwa | 4.2 (0.5, 34.2) | 9.3 (8.4, 10.2) | 30.5 (21.5, 43.2) | 28.1 (3.7, 12.8) | 146.1 (116.9, 182.7) | 821.0 (572.7, 1176.8) |

[a]One observation only; LOD is limit of detection.