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Study finds crop fungus not linked to malnutrition in Timor-Leste

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A global team including researchers from The University of Western Australia has assessed the impact of fungal contamination in maize and peanuts on the health of women and children in Timor-Leste and found that it was unlikely to cause stunting in children.

Published in *Nature Scientific Reports*, the study measured levels of aflatoxin (a toxic and carcinogenic substance produced by the fungus Aspergillus sp.) in locally produced maize and peanuts, and in blood samples taken from women and young children in Timor-Leste.

Both maize and peanut crops are food staples in Timor-Leste, with maize the most important crop nationally and peanuts providing a major source of protein to the population's diet.

Professor William Erskine from UWA's School of Agriculture and Environment and UWA's Institute of Agriculture, and Director of the UWA Centre for Plant Genetics and Breeding, said that aflatoxin-affected grain presented a major global health issue to both commercial and subsistence farming.

"Most developing countries, where subsistence farming is most common, do not or cannot regulate the quality of grain consumed by the population," Professor Erskine said.

"Subsistence farmers who produce and consume their own produce are especially exposed to the negative impacts of aflatoxin affected grain, as it is not subject to quality testing."

The study has significant implications for the causes of malnutrition in women and children in Timor-Leste. Many people in Timor-Leste are malnourished and more than half the children under the age of five suffer from stunting.

"We thought that one factor that might contribute to stunting in children is exposure to aflatoxin. However, our results suggest this is not the case," Professor Erskine said.

"For the vast majority of samples, we found that aflatoxin levels in

maize and peanuts was below the European Commission tolerated aflatoxin level, and that the levels of aflatoxin-albumin conjugate detected in blood samples was lower than in other similar rural-based countries."

Dr. Eric Huttner, from the Australian Centre for International Agricultural Research, said that the study provided an important benchmark for understanding the causes of malnutrition in Timor-Leste and beyond.

"The study finds no evidence that child stunting and aflatoxin level in blood are correlated, which is good news because it suggests that reducing child stunting will not require complex screening of food," Dr. Huttner said. "Reducing stunting will not be an easy task, but ruling out aflatoxin as a necessary point of intervention will be very useful."

The research team noted that despite it being unlikely to cause stunting, the presence of aflatoxin still represented a risk in the production and consumption of maize and peanuts that required management locally.

"We need to increase awareness of aflatoxin risk in maize and peanuts, and develop techniques to reduce contamination," Professor Erskine said. "Farmers should be encouraged to dry their corn and peanuts as quickly as possible, to continue to select clean cobs and pods to be used as food, and to store produce in dry places."

Dr. Huttner said the study would be important for policy-makers to guide future decisions on food safety and regulation.

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More information: Luis de Almeida et al. Aflatoxin levels in maize and peanut and blood in women and children: The case of Timor-Leste, *Scientific Reports* (2019). DOI: 10.1038/s41598-019-49584-1