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Modern and effective combinations of probiotic and yeast strains to remove total aflatoxin (B1, B2, G1, G2, M1 and M2) contaminated in cerelac cereal for mother and babies (*in vivo* & *in vitro*)

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Aflatoxins found in dairy products and animal feeds represent a serious problem for human and animal health. In present study, combined effect of probiotic bacteria; *Lactobacillus acidophilus*, *Bifidobacterium bifidum* and yeast strains; *kluyveromyces lactis* and *Saccharomyce cerevisiae* were used for detoxification of aflatoxins (B1, B2, G1, G2) in animals fed on flour contains some of these toxins. Aflatoxins' residues were determined in the mothers and their infants using HPLC. The *in vitro* study revealed that the probiotic bacterium *Lactobacillus*, *B. bifidum* and their combination were able to lower the level of aflatoxins in PBS solutions by 30%, 44%, and 59%; respectively. Similarly, each of the two yeast strains, *S. cerevisiae* and *K. lactus*, showed efficient detoxification of aflatoxins by percentage 50%, with a higher efficiency when used in combination up to 75%. Interestingly, higher rate of detoxification (94%) was achieved after 72 hours treatment by using combination of the two bacterial and the two yeast strains. Therefore, we select these combinations mixed altogether with flour containing the four aflatoxin, and then the toxins' residues were determined in the flour after 72 hours. Results revealed that aflatoxins' levels were reduced by 87% compared to non-treated flour. We applied the previous trial on the animals and aflatoxins were determined in the serum of the adult rat and their infants. Group one and group two serum did not contain any type of the four aflatoxins. Whenever, group three serum adult rat one contains aflatoxin (G2,G1,B2,B1) with percentage 12.5%, infants one serum contains both aflatoxins (M2, M1) with percentage 10% but the infants two and three serums contains aflatoxins (M2, M1). Moreover, Group four contains adult one and its serum contains aflatoxins (G1, B2, B1), and infants one, two and three contains M2 and M1. Creatinin in the adult rat treated with aflatoxins was 85 but in infants it was around 74. On other hand, creatinin in the serum of control animals was ranged from 41 to 44. But in the adult rat treated with aflatoxin-probiotic mix, creatinin was about 46 and it ranged between 31 to 34 in the infants. Urea in control animals, adult rat and their infants were ranged from 37 to 49. But treated with aflatoxin, only adult rat and their infants was ranged from 78 to 91. In case of mothers treated with aflatoxin and probiotic bacteria; urea level in the serum of adult rat and their babies ranged between 42 to 50. Liver GOT enzyme in the control animals (adult rat and their infants) were ranged between 9.19. Whenever, adult rat treated with aflatoxin only then their infants were ranged between 31 to 73. This reading was decreased in animals treated with aflatoxin-probiotic mix and it was ranged between 18 to 21. In case of liver GPT, it was ranged between 28 to 40 in control animals. But in the animals treated with aflatoxin only, their infants Gpt level was ranged from 25 to 73. In the treated animals with probiotic and their infants, it was ranged between 44 to 48.

Biography

Gamal M. Hamad was awarded PhD in Food Technology Department, from Arid Land Cultivation Research Institute (ALCRI), Egypt. He has extended his valuable service for many years and has been a recipient of many award and grants. Currently, he is working as a Professor & President at Food Technology Department, Ethiopia. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect in his wide range of publications in various national and international journals

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