STUDY OF TOXIGENIC FUNGI AND THEIR MYCOTOXINS IN MILDEWED SUGAR-CANE

Y.Z.ZHEN Y.D.XING M.XU S.Y.HAN G.T.LIU Z.P.LIU Y.F.CHEN

Henan Medical University, Zhengzhou, Henan, P.R.C.

The culture and isolation of fungi from the mildewed sugar-cane causing alimentary toxicosis has been carried out. The *Fusarium moniliforme* and *Penicillium cyclopium* were found to be absolutely predominant. The extracts either from the mildewed sugar-cane or the fungi can cause severe necrosis on the rabbit skin and acute toxic death of mice and duckling. The features of toxicosis in animals were similar to those in man with alimentary toxicosis. The main symptoms are the disorders in the nervous system"(ref.1)"

The cultures of *F. moniliforme* and *P. cyclopium* extracted with ethyl acetate. Then the extracts were dissolved in dimethyl sulfoxide. The concentration were 50g sugar-cane cultures/ml DMSO. The ID₅₀ of extract from *F. moniliforme* i.p. to mice was 1.602ml/kg. The ID₅₀ of extract from *P. cyclopium* i.p. to mice was 1.090 ml/kg. The two extracts were equally mixed i.p. to the mice. The result shows that the toxicity of two extracts from *F. moniliforme* and *P. cyclopium* had an additive effect"(ref. 1)"

When the extract of *F. moniliforme* culture was i.p. to mice, the pathological changes were occurred that in the nervous system, the brain was severe encephalomalacia, edema and hyperaemia, the brain stem and spinal cord were vacuolar degeneration, edema and hyperaemia was occurred. In the internal organs, the granular degeneration of renal tubules, clouding swelling of liver cell was occurred. The lung was only edema. But the heart have no any pathological change was occurred."(ref. 2)"

The extract of *F. moniliforme* affected to CHO cell and human amniotic membrane(FL) cell strain, in the lower concentration, the growth of the cells were inhibited, in the higher concentration, the cells were fell off from the flask and died."(ref. 2)"

The extracts of *F. moniliforme* and *P. cyclopium* to do the tests of "Bacterial Reversion Mutation", "DNA Recombination" and "SCE"

were got positive results. The mycotoxin of two fungi stored at 25 C in sugar-cane for six monthes or in DMSO for one year, the toxicity is constant."(ref. 2)"

The suitable temperature of two fungi for growth and producing mycotoxin is at 25 C, the change of the temperature are unfavourable for the production of mycotoxin."(ref. 2)"

The intensity of the toxicity of *F. moniliforme* is in ratio to the shades of their pigment."(ref. 2)"

The reasons to cause mildew of sugar-cane are the serious damage of sugar-cane in the processes of the transportation, loading and unloading. The fungi invaded to the sugar-cane in the sites of damage in winter, but the temperature of the time was not favourable for two fungi to grow and produce mycotoxin. When the temperature were rising to 25 C $\pm$ in the spring, the fungi begin quickly grow and produce mycotoxin. Therefore, the alimentary toxicosis was frequently occurred in the spring."(ref. 2)"

REFERENCES

- 1 Zhen Ying Zhong, Xing Yi Ding, Li Jin Ling, XU Min, Liu Gui Ting. The Culture and Isolation Of Toxigenic Fungi from Mildewed Sugar-cane and the Examination of the Toxicity. National Medical Journal of China 64(11), (1984): 664-666
- 2 Zhen Ying Zhong, etal. Futher Study of Toxigenic Fungi and Their Mycotoxin in Mildewed Sugar-cane. in preparation.