

## DETOXIFICATION OF AFLATOXIN BY GARLIC AND SOME HOMOEOPATHIC DRUGS

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Garlic and homeopathic drugs reduced the aflatoxin B<sub>1</sub> present in oil seeds of *Brassica campestris*, *Linum usitatissimum* and *Sesamum indicum* to the recommended level approved by World Health Organization and a minimum dose of 40% garlic or 1000 ppm of sulphur or Bacillinium detoxify the aflatoxin B<sub>1</sub> in the substrate.

**Keywords :** Aflatoxin; Garlic; Homeopathic drugs; Oil seeds.

Quantitative studies show the presence of aflatoxin in oil seeds of *Brassica campestris*, *Linum usitatissimum* and *Sesamum indicum* in more than the recommended level as approved by World Health Organisation i.e. 20 µg/kg<sup>1</sup>. This aflatoxin passes into oils when extracted from infested seeds and pose a serious health hazard when consumed, due to their carcinogenic nature. Therefore, it is necessary to detoxify the aflatoxin contents in the substrate. Some of the spices and selected homoeopathic drugs are used as an inhibitor of aflatoxin production<sup>2-4</sup>. In the present work garlic extract and some homoeopathic drugs namely Rhustox, Sulphur, Bacillinium have been screened as a possible detoxificants against aflatoxin present in oil seeds of *B. campestris*, *L. usitatissimum* and *S. indicum*.

Contaminated samples of oil seeds were shaken for half an hour on a mechanical shaker in 10, 20 and 40% garlic extract and 500, 1000 and 2000 ppm of three homoeopathic drugs (Potency - 30) viz., Rhustox, Sulphur and Bacillinium and then kept stationary. Untreated seeds were used as control. Aflatoxin was extracted from treated and controlled seeds with chloroform<sup>5</sup> and quantity was estimated spectrophotometrically.

Table 1 shows that 10 and 20%

garlic reduced the AFB<sub>1</sub> present in *B. campestris* (43.0 µg/kg) to 7.0 and 4.2 µg/kg and in *S. indicum* (22.0 µg/kg) to 2.5 and 1.2 µg/kg respectively. AFB<sub>1</sub> was completely detoxified by 40% garlic in both the seeds. In *L. usitatissimum* (AFB<sub>1</sub> - 81.2 µg/kg), garlic extract reduced the appreciable amount of AFB<sub>1</sub> but failed to detoxify it.

Table 2 shows that a minimum dose of 1000 ppm of Sulphur or Bacillinium detoxified AFB<sub>1</sub> present in *B. campestris*, *S. indicum* and *L. usitatissimum* while 1000 ppm of Rhustox or 500 ppm of Sulphur or Bacillinium only reduced the quantity of AFB<sub>1</sub>.

Therefore, the present findings indicate that garlic and homoeopathic drugs can bring down the quantity of AFB<sub>1</sub> present in the substrate to the recommended level. A minimum dose of 40% garlic or 1000 ppm of Sulphur or Bacillinium can also be used as a prominent detoxificant against aflatoxin B<sub>1</sub> and garlic, a commonly used condiment has no adverse effect on human health.

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Table 1. Efficacy of garlic extract against aflatoxin in oil seeds.

Substrate	Natural contamination of AFB <sub>1</sub> (µg/kg)	Treatment	Concentration in %	Quantity of AFB <sub>1</sub> (µg/kg) after treatment
<i>Brassica campestris</i>	43.0	Garlic extract	10	7.0
			20	4.2
			40	0.0
<i>Linum usitatissimum</i>	81.2	-do-	10	21.2
			20	17.0
			40	15.0
<i>Sesamum indicum</i>	22.0	-do-	10	2.5
			20	1.2
			40	0.0

Table 2. Antitoxic activity of homoeopathic drugs against aflatoxin B<sub>1</sub> in oil seeds.

Substrate	Natural contamination of AFB <sub>1</sub> (µg/kg) in substrate	Treatment	Concentration in ppm	Quantity of AFB <sub>1</sub> (µg/kg) after treatment
<i>Brassica campestris</i>	43.0	Rhustox	500	37.0
			1000	14.9
			2000	12.0
		Sulphur	500	15.0
			1000	0.0
			2000	0.0
		Bacillinium	500	5.4
			1000	0.0
			2000	0.0
<i>Linum usitatissimum</i>	81.2	Rhustox	500	48.2
			1000	24.0
			2000	14.2
		Sulphur	500	10.0
			1000	Trace
			2000	0.0
		Bacillinium	500	9.8
			1000	0.0
			2000	0.0
<i>Sesamum indicum</i>	22.0	Rhustox	500	9.0
			1000	4.2
			2000	Trace
		Sulphur	500	7.2
			1000	0.0
			2000	0.0
		Bacillinium	500	4.6
			1000	0.0
			2000	0.0

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