



# Role of Aflatoxins in Cancer of Gallbladder in North India

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Dear Sir,

I read with interest the hypothesis by Bobby and Mathew about the possibility of microplastics being involved in the gallbladder cancer (CAGB) hotspot along the Gangetic basin.<sup>1</sup> Microplastics are ubiquitous, not limited to the Ganges, and as the authors admit, there is little or no evidence to link them with cancer of any system. As an oncologist who worked in North India, I found that very few patients drink water directly from the Ganges; their water supply, depending on the area of residence, is either piped supply or wells. It is also pertinent to note that this CAGB hotspot includes regions where the Ganges does not flow, ranging from northeast India, Pakistan,<sup>2</sup> and Nepal.<sup>3</sup>

The strongest link to CAGB is cholesterol gallstones (overlooked by the authors) and there is a definite dichotomy here, with North Indians (especially women) being more prone to cholesterol gallstones and South Indians to pigmentary stones; this could be due to genetic (such as ATP binding cassette transporter B1 [ABCB4] mutations mentioned by the authors) or dietary factors. Excess cholesterol in the human body is treated as a toxin and pumped out into bile by the ATP-binding cassette transporter system, the same system is used for other xenobiotics.<sup>4</sup> In 2008, I had hypothesized that a hepatocarcinogen like aflatoxin B (common across India due to poor food storage practices) could be pumped out along with cholesterol in individuals prone to cholesterol gallstones and thus explain the association between cholesterol gallstones and CAGB.<sup>5</sup> Aflatoxin contamination is common in food items such as rice, wheat, peanuts, maize, and even red chili peppers in India, where storage in hot humid conditions is conducive to the growth of the fungus, *Aspergillus* spp.<sup>6</sup>

Since then, there have been epidemiological studies from hotspots such as Chile<sup>7</sup>, China,<sup>8</sup> and India<sup>9</sup> confirming this association. The trend in incidence of this cancer in future will provide a clue, as a fall would indicate the role of a preventable

food contaminant (as food hygiene practices have been improving over the last few decades), and a rise, possibly microplastics. CAGB is a serious concern across North India as it disproportionately affects women of reproductive age and shatters family dynamics, and more research is urgently required to pinpoint the cause.

## Conflict of Interest

None declared.

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