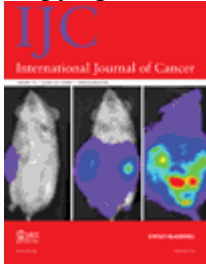




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- [Abstract PDF \(620K\)](#) [References](#)

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A. Karande, P. J. Fialkow, K. Nilsson, S. Povey, G. Klein, V. Najfeld and G. Penfold

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- [Abstract PDF\(732K\)](#) [References](#)

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- [Abstract PDF\(1143K\)](#) [References](#)

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Article first published online: 17 JUL 2006 | DOI: 10.1002/ijc.2910260510

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- [Abstract PDF\(1060K\) References](#)

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- [Abstract PDF\(442K\) References](#)

[Non-random duplication of chromosome 15 in murine T-cell leukemias: Further studies on translocation heterozygotes \(pages 661–668\)](#)

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Article

A fine fibrous silica contaminant of flour in the high oesophageal cancer area of North-East Iran

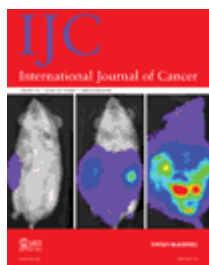
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Abstract

We report here the discovery and characterization of a fibrous mineral contaminant of the diet in that area of north-east Iran where oesophageal cancer has a very high incidence. This contaminant has a smoothly tapering shape and is between 50 and 150 μm long. The greatest diameter is between 1 and 10 μm and this decreases to a sharply pointed tip with a radius of curvature of between 0.25 and 0.60 μm . Electron microscope X-ray analysis shows that this fibre consists almost entirely of silica. It is free from alkali metals, aluminium and iron, and therefore differs from other known natural or manmade mineral fibres. Examination of the seeds of more than sixty different species of weed known to contaminate the wheat in this area of the Middle East shows that the fibre originates from the seeds of the common Mediterranean grass *Phalaris minor*. This seed bears fibres of the same dimensions, composition and birefringence, borne upon the inflorescence bracts which envelop the pericarp of the seeds of this and other members of the *Phalaris* genus. They are broken off from the seed when the wheat is milled but persist in the flour, where up to 3,000 are found in each gram. Similar fibres can be isolated in quantity from the seeds of related species which are grown commercially, and they have a similar size and composition. When cells of the 3T3 mouse fibroblast line are exposed to these fibres in semi-solid suspension culture, their proliferation is stimulated more than 100-fold. We present an hypothesis for the involvement of these plant mineral fibres in the aetiology of oesophageal cancer in Iran and in other areas of high incidence.

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