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## Carcinogenesis Associated with Dimethyl Sulfoxide

Dear Sir,

We wish to draw your attention to the possible association between dimethyl sulfoxide (DMSO) and carcinogenesis.

During an experimental project on bladder cancer, dibutyl-n-nitrosamine was administered to white Wistar rats subcutaneously diluted in DMSO. The daily dose of the carcinogen ranged from 30 to 100 mg/kg, and the exposure lasted from 50 to 320 days. We noted that apart from the appearance of transitional cell bladder carcinomas, one third of the animals also developed lung tumors. These tumors appeared after at least 150 days of exposure and were adenocarcinomas originating from the alveolar epithelium.

This finding is compatible with previous observations made by Sanders et al. [1], who reported the induction of

cancer in the lung of rats given dibutyl-n-nitrosamine subcutaneously with DMSO as its solvent in 1974. These authors postulated that DMSO could have an organotropic action, directing the carcinogenic effect of dibutyl-n-nitrosamine upon the lung. They also noted that dibutyl-n-nitrosamine diluted in cellulose oil failed to cause any tumors in the lung in another series of animals.

DMSO is a potent organic solvent widely used in industry [2]. Since 1968 it has been used in urology for the treatment of patients with interstitial cystitis in the form of intravesical instillations [3]. Its therapeutic effect seems to be achieved by means of local chemical denervation [4]. Although to date no serious side effects have been reported from such treatment, the possibility of carcinogenesis associated with DMSO should be given consideration before advocating its administration.

### References

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- 3 Stewart BH, Persky L, Kiser WS: The use of dimethyl sulfoxide in the treatment of interstitial cystitis. *J Urol* 1968;98:671-672.
- 4 Perimenis P, Speakman M, Athanasopoulos A, Barbalias G: The treatment of interstitial cystitis syndrome with intravesical dimethyl sulfoxide (English summary). *Hellen Urol* 1990;2: 149-152.