# HSP60 expression during carcinogenesis: A molecular "Proteus" of carcinogenesis?

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Letter to the Editor

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# HSP60 expression during carcinogenesis: a molecular "Proteus" of carcinogenesis?

**Francesco Cappello and Giovanni Zummo**

Sir,

I read with much interest the comprehensive review by Ciocca and Calderwood (2005) in which they analyze the diagnostic, prognostic, predictive, and treatment values of a number of Hsps in oncology. Concerning the implications of Hsps in cancer diagnosis in particular, they report that since ''Hsps are overexpressed in a wide range of malignant cells and tissues . . . Hsp detection is not useful in diagnostic immunopathology.'' Nevertheless, ''Hsp expression levels can help indicate the presence of abnormal changes during the process of carcinogenesis.'' The authors support this remark by reference to several papers by our group (Cappello et al 2002–2003, 2003a, 2003b, 2003c) in which we demonstrate that Hsp60 and Hsp10 are overexpressed during colorectal, prostatic, and exocervical carcinogenesis.

We would now like to add some recent information and a new topic.

Lebret et al (2003) were the first to demonstrate that Hsp60 could also lose its expression during carcinogenesis, specifically in a vesical one. This datum was quite surprising for us and we decided to perform a study (submitted) on a wide range of bladder transitional cell carcinomas (TCC) at different levels and stages. In this study we show that Hsp60 disappears in TCC in relation to the tumoral level of the neoplasm. At the same time, we recorded the overexpression of Hsp10 in the same tumors. In agreement with our previous studies (Cappello et al 2004), we suggested that Hsp10 may have different roles than that of the cochaperonin in human cells, ie, contributing to cellular differentiation and proliferation.

Interestingly, we recently reported that Hsp60 might also be a novel biomarker during bronchial carcinogenesis (Cappello et al 2005). Indeed, we studied a series of bronchial biopsies of subjects who were smokers, and we showed that normal and hyperplastic mucosae present Hsp60 immunopositivity in 60% of epithelial cells; by contrast, only 5% of epithelial elements of patients with squamous metaplasia showed Hsp60 presence on epithelial surface, and its positivity completely disappeared in dysplastic and tumoral specimens. We still have no data on Hsp10 presence and expression in bronchial carcinogenesis.

In our letter, we would like to express an opinion and pose a question. Even if it is still unrealistic to affirm that Hsp60 overexpression is correlated with cancer development and progression (since it seems to depend on the tissues of origin of the neoplasm), we ask 'Why does Hsp60 show a discrepancy in its expression during carcinogenesis?' For example, since it has been suggested that Hsp60 may have both pro- and antiapoptotic roles in tumoral cells (Faried et al 2004; Di Felice et al 2005), we may postulate that its levels may be dependent on the expression of other proteins involved in activation of the apoptotic pathway. We now need to find these proteins.

In conclusion, we believe that a better understanding of the molecular bases of Hsp60 expression during carcinogenesis will probably also expand our therapeutic targets against cancer.

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