

the corresponding laboratory and imaging test results. Eight cases are presented, the following being a typical example: The cancer markers CA 125 and CEA normalized in a 71-year-old metastatic lung cancer patient after starting Inositol + Cal Mag IP6. The patient did not receive any chemotherapy and only palliative radiation for a slowly healing shoulder that had broken due to metastasis to the bones. Initially the patient was given 4 to 6 weeks, but lived until October the next year after starting the supplement towards the end of September 2002. His CA 125 was 294 on August 7, 153 on October 11, 20 on November 27, 36 on February 4. Normal is less than 35. His CEA was 16.8 on August 7, 6.3 on October 11, 2.0 on November 27, 2.9 on February 4. Normal is less than 4. Metastasis to the brain resulted in difficulty verbalizing, using numbers and unsteadiness on his feet. The patient's quality of life was better after starting the Inositol + Cal Mag IP6, as his energy, speech, mood and gait improved.

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**INDUCTION OF APOPTOSIS AND NECROSIS BY DIFFERENT RESISTANCE MODIFYING BENZAZOLES AND BENZOXAZINES ON MOUSE LYMPHOMA L5718 MDR+ CELLS**

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The apoptosis and necrosis induction of 18 new resistance modifying heterocyclic compounds (synthesized by Esin Aki-Sener *et al.* in Ankara) were investigated on multidrug-resistant tumour cell lines. Reversal of multidrug resistance of benzazoles and benzoxazines compounds was shown on human MDR1 gene transfected mouse lymphoma cells. Rhodamine 123 and Doxorubicin were applied as substrates in these experiments and the drug accumulation was followed by flow cytometry. For the evaluation of apoptosis, the cells were stained with FITC-labelled Annexin-V or mericine and propidium iodide, and the results were analysed by flow cytometry. Out of 18 compounds, only two showed a weak apoptosis or necrosis-inducing effect at the concentrations applied. Three compounds inhibited the apoptosis induced by

12H-benzo/a/phenothiazines, (M-627), synthesized by Mothohashi and co-workers in Tokyo. However, some of the compounds (*e.g.* benzoxazole- synonym: BD 3) showed a synergetic effect together with M-627 for the induction of apoptosis. On the other hand, benzazoles inhibited the apoptosis-inducing effect of M-627 D 7, despite the fact that the molecule was quite similar in structure to the previous one (without -CH<sub>2</sub>- bridge). Another heterocyclic molecule, 2-(p-nitro-benzyl) benzoxazole, with one NO<sub>2</sub> group also increased the apoptotic effect of M-627. These results show that some new heterocyclic resistance modifying compounds, alone or in combination, influence (increase or reduce) the programmed cell death of multidrug-resistant cancer cells.

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**EFFECT OF ALLELIC POLYMORPHISM OF P53 TUMOR SUPPRESSOR GENE AND VITAMIN-D RECEPTOR GENE ON INDIVIDUAL SUSCEPTIBILITY TO BREAST CANCER**

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Breast cancer is one of the leading causes of death in Hungary, and this fact underlines the importance of searching for factors affecting the risk of breast cancer formation. During the last few years, this research included studying those minor genetic factors which affect the individuals susceptibility to breast cancer. These genetic factors – mainly allelic polymorphisms of metabolizing enzymes, onco/tumor suppressor genes, genes in the estrogen metabolism – do not cause hereditary tumors or familial aggregation of cancers. Their effect is relatively small, and they can only be studied using molecular epidemiological methods, at a population level. However, in interaction with environmental and other genetic factors, they can seriously alter the cancer risk at an individual level.

In our case-control study, we investigated the effect of codon 72 Arg/Pro polymorphism in the p53 tumor suppressor gene, and BsmI - FokI polymorphisms in the vitamin-D receptor gene on the risk of breast cancer formation in a Hungarian population. 207 samples were genotyped with allele specific polymerase chain reaction (p53) and PCR-RFLP (vitamin-D receptor polymorphisms), and the results were compared with allelic frequencies of cancer-free controls (n=500).