

CHEMOPREVENTION BY ANTINEOPLASTON A10 OF BENZO(a)PYRENE-INDUCED PULMONARY NEOPLASIA

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Summary: *The effect of Antineoplaston A10 (AA10), an amino acid derivative isolated from human urine, has been studied on pulmonary adenoma formation resulting from intragastric administration of benzo(a)pyrene (BP) to A/HeJ mice. Two doses of BP, 3 mg each, administered two weeks apart, induced an average of 6.86 tumours within 157 days in the control animals (Tumorigenic Index 437). One per cent of AA10 (w/w) given in mouse food for one week prior to, and then continued after the administration of BP, produced a 70% reduction in the total number of tumours in the test groups.*

Introduction

Polycyclic aromatic hydrocarbons (PAH) are thought to play a significant role in the aetiology of human cancer (1-3). Benzo(a)pyrene, a prototype of carcinogenic PAH, is a ubiquitous environmental pollutant (1) and is present in tobacco smoke (4, 5), charcoal grilled steaks (6, 7), various oils, margarine, butter, fats (8), fruits, vegetables and cereals (9). It seems practically impossible to avoid the risk of repeated exposure to this "omnipresent" carcinogen. This potential danger calls for the development of effective and nontoxic agents that can retard or inhibit the carcinogenic processes induced by the environmental chemicals.

Antineoplaston A10, 3-phenylacetyl-amino-2,6-piperidinedione, is the first compound belonging to

the group of antineoplastons to be identified and reproduced by synthesis (10, 11). Human toxicology studies have shown that AA10 does not produce significant adverse effects in spite of high doses administered for a long duration. AA10 has also shown beneficial effects as a therapeutic agent in certain advanced neoplastic diseases (12). It has been postulated that AA10 may function as a naturally-occurring anticarcinogenic agent through competitive intercalation with BP analogues (11, 13).

The low toxicity, effectiveness as an antineoplastic agent and the natural occurrence in the human body makes AA10 an attractive compound for chemoprevention of cancer. The authors therefore undertook studies to determine the preventive effect of AA10 on the induction of pulmonary adenoma by BP in A/HeJ mice.