



Antineoplastons

Antineoplastons A10[®] and AS2-1[®] Injections

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Origins and History

Antineoplaston A10 (A10) is a mixture of sodium salts of phenylacetylglutamine (PG) and phenylacetylisoglutamine (isoPG) in a 4:1 ratio. Antineoplaston AS2-1 (AS2-1) is a mixture of the sodium salts of phenylacetic acid (PN) and PG in a 4:1 ratio.

Antineoplastons A10 and AS2-1 are the lead formulations in a new class of antitumor agents called *antineoplastons*. Chemically, antineoplastons are peptides, amino acid derivatives, and organic acids. The research into antineoplastons, which has developed over the last 30 years, is based on the theory of the existence of a system of expression modulators of oncogenes, tumor suppressor genes, and differentiation inducers. The main purpose of the components of this system, called antineoplastons, is the defense of the body against occurrence of defective cells. The mechanism of defense is based not on destruction, but on down-regulation of oncogenes or up-regulation of tumor suppressor genes and induction of differentiation in defective cells. Research into antineoplastons began in 1967 when significant deficiencies of the peptide content were noted in the serum of cancer patients compared with healthy people. Initially, antineoplastons were isolated from blood and later from urine. The first active component, Antineoplaston A10, was identified as 3-phenylacetyl-amino-2,6-piperidinedione and was reproduced synthetically. A10 and AS2-1 injections are synthetic analogs of metabolites of 3-phenylacetyl-amino-2,6-piperidinedione.¹

Mechanism of Action According to Its Own Theory

The exciting aspect of the mechanism of action of antineoplastons is down-regulation of oncogenes and activation of tumor-suppressor genes. Neoplastic process results from increased activity of oncogenes and decreased expression of tumor suppressor genes. Effective cancer treatment requires reverse action on these genes.²