

Biologic Mechanism of Action

Based on published data, PN works as a chemical microswitch that turns off signal transduction through the *ras* oncogene pathway by inhibition of farnesylation of the p21^{ras} protein and causes downregulation of Bcl-2.^{3,4} PN also increases the expression of the p53 tumor suppressor gene. Activation of the p53 system involves increasing both the expression of the WAF1 gene and formation of p21^{WAF1} protein, which demethylate promoter sequences of tumor suppressor genes.⁵ In vitro studies also have shown that PG and isoPG have antineoplastic activity and that their mechanisms appear to differ from that of PN.

Demographics

A10 and AS2-1 are available only in FDA-controlled Phase II studies. Currently 67 studies are conducted under IND # 43,742, involving more than 1000 physicians in the United States, Canada, The Netherlands, United Kingdom, Australia, and Japan. Such practitioners, usually oncologists and internists, are homogeneously distributed throughout the U.S. The additional physicians who would like to use antineoplastons in the treatment of their patients should contact Burzynski Clinic for further information. The treatment is used both for children as young as 3 months of age and adults with no upper age limit. Among the patients there is approximately an equal ratio between men and women. Antineoplastons have been applied to patients of all races and cultures, but most of the patients are middle-class Caucasians with a high school or university education.

Forms of Therapy

A10 and AS2-1 injections are administered intravenously and intraarterially. The injections are delivered through intravenous or intraarterial catheter and ambulatory infusion pump. The treatment does not require hospitalization.

Indications and Reasons for Referral

The classic reason for referring to this type of therapy is incurable cancer. The therapy is applied the best for primary brain tumors, especially anaplastic astrocytoma, low-grade astrocytoma, mixed glioma, brain stem glioma, and glioblastoma multiforme. The additional indications for Phase II studies in brain tumors include the following: oligodendroglioma; primitive neuroectodermal tumor (PNET); rhabdoid tumor; neurofibroma; schwannoma; visual pathway glioma; ependymoma; craniopharyngioma; choroid plexus carcinoma; germ cell tumor, and meningioma. The therapy also is best applied to non-Hodgkin's lymphoma, cancers of the esophagus, pancreas, prostate, and unknown origin, and neuroblastoma. Additional Phase II studies are conducted in breast, colon, lung, liver, kidney, ovary, and uterine cancers. Clinical studies also are conducted in multiple myeloma, mesothelioma, ma-