Inhibition of N-Methyl-D-Aspartate-Nitric Oxide Synthase Activity by Ethanol Involves Tetrahydrobiopterin

Among the neurotransmitter systems in the central nervous system, the glutamatergic system, particularly its N-methyl-D-aspartate (NMDA) receptors, is known to exhibit special sensitivity to ethanol [4]. However, chronic alcohol treatment enhances NMDA receptor-dependent neuronal nitric oxide synthase (NOS) activity [1]. Czapski et al. [3] report that the inhibitory effect of ethanol on NMDA-NOS activity in hippocampal slices is not due to an alteration of NMDA receptor binding or an increase in lipid peroxidation, but to a change in binding of tetrahydrobiopterin to the NOS protein.

Isolation of Functional Neural Progenitor Cells

Neuronal cell growth has attracted attention because of its enormous potential in the treatment of spinal cord injury. Using primary cultures from postnatal rat spinal cord, Keel et al. [10] reported the importance of neurotrophic factors in neurogenesis. Following this lead, Tseng [19] cultured neuronal cells from newborn rat spinal cord and found that these cells proliferate and differentiate into astroglia and multiple neuronal populations under the influence of neurotrophic factors. This opens an opportunity for the use of neural progenitor cells in the treatment of spinal cord injury.

Hyperaggregability of Platelets during Normal Pregnancy

Enhanced platelet activation in pregnancy is recognized to be one form of generalized coagulopathy that results in an increased risk of thrombosis [13]. An increase in thromboxane A2 formation also occurs during pregnancy [7]. However, most of the studies on agonist-induced hyperaggregability have been carried out in washed platelets. Sheu et al. [17] demonstrated that the same phenomenon occurs in platelet-rich plasma obtained from normal pregnant women. They further pointed out that this platelet hyperaggregability may be partly mediated by an increase in thromboxane A2 formation and a decrease in the level of cyclic AMP.

Interaction between Interleukin-1 and Interleukin-1 Receptor Antagonist Underlies the Regulation of Antigen-Specific Immune Responses

Interleukin (IL)-1 is a central mediator of host immune and inflammatory responses and contributes to a number of normal physiological processes and inflammatory diseases. IL-1 receptor antagonist (IL-1Ra) suppresses IL-1 functions. IL-1 and IL-1Ra are rapidly produced by activated monocytes and macrophages during the innate immune response [5]. However, the physiological role of IL-1 and IL-1Ra in the regulation of antigen-specific immune responses remains unknown. Using a liposome-DNA delivery system to transiently express IL-1Ra at the site of the antigen-specific primary immune response, Lin et al. [12] observed that IL-1Ra downregulates antigen-specific IL-4 and IgE responses in vivo. IL-1Ra also enhances interferon-γ and IgG2a responses in vivo.

Angiogenesis Inhibitors and Treatment for Malaria

Malaria is one of the most devastating global diseases. Since chloroquine-resistant malaria is emerging rapidly in sub-Saharan Africa [14], there is an urgent need to develop new therapeutics for this disease. Zhang et al. [20] report on the cloning of methionine aminopeptidase 2 from Plasmodium falciparum. They show that the angiogenesis inhibitors fumagillin and TNP-470 are potent inhibitors of methionine aminopeptidase 2 and can inhibit the in vitro growth of chloroquine-resistant P. falciparum.

Therapy for Nasopharyngeal Carcinoma

Nasopharyngeal carcinoma (NPC) is a common type of cancer found in southeastern China, including Taiwan. Hitherto, most attention has been paid to Epstein-Barr virus, which is known to be an important agent related to NPC etiology [9]. However, human papillomavirus is also found in a number of NPC patients [21]. Chow et al. [2] followed this lead and evaluated whether the vulnerability of nasopharyngeal cancer cells to human papillomavirus can be exploited for gene therapy of NPC.

Formation of Tryptophan-Nitric Oxide Adduct by Human Serum Albumin

Whereas it is common knowledge that nitric oxide (NO) has a very short half-life in vitro, Stamler et al. [18] put forth the idea that free thiol groups in plasma react with NO to form biologically active S-NO adducts that serve as a stable reservoir of NO. Harohalli et al. [8] compared the patterns of NO release from nitrosated bovine serum albumin, human serum albumin and a number of recombinant human serum albumin mutants. They found that Cys-34 is the primary target for nitrosation in bovine serum albumin. In contrast, Trp-214 is the primary nitrosation target in human serum albumin. They proposed that this tryptophan-NO adduct formation may underlie the beneficial effects of human serum albumin in the treatment of cardiovascular diseases.

Organization and Expression of the Cyr61 Gene in Normal Human Fibroblasts

Cyr61 is an extracellular matrix-associated protein of the CNN protein family that regulates cellular adhesion and migration and is involved in differentiation, mitogenesis and angiogenesis. Leng et al. [11] examined the structure of the Cyr61 gene and the encoded transcripts in normal human...
biological effector functions. The Cyr61 protein, which may have different isoforms of the full-length protein. Further results indicate the presence of several isoforms of the Cyr61 protein that is more stable than the species encodes an internally truncated deletion within exon 4. This novel mRNA alternatively spliced mRNA with an in-frame fibroblasts and found the presence of an alternatively spliced mRNA with an in-frame deletion within exon 4. This novel mRNA species encodes an internally truncated Cyr61 protein that is more stable than the full-length protein. Further results indicate the presence of several isoforms of the Cyr61 protein, which may have different biological effector functions.

**Identification of the Region of Long Terminal Repeat Associated with Repression of the HIV-1 Gene**

The long terminal repeat (LTR) is a complex sequence element that encodes numerous binding sites for transcription factors. The transcriptional promoter of human immunodeficiency virus type 1 (HIV-1) is located within the LTR segment of the retroviral genome. While most LTR regions studied have shown an increase in transcriptional activity, Pereira et al. [15] reported that the region from nt –320 to –281 is associated with repression of HIV-1 gene expression. This repressive element includes binding sites for basic helix-loop-helix and E-box/c-Myb proteins, as well as a pair of consensus GATA sites.

**HIV-1 Nef Protein Induces Multiple Gene Expression**

DNA microarray has become a powerful technique for the rapid profiling of the expression of large numbers of genes [6]. Shaheduzzaman et al. [16] utilized this technique to analyze the ability of the HIV-1 Nef protein to modulate the expression of the human genome. They found that genes coding for proteases, transcription factors, protein kinases, nuclear import/export proteins, adaptor molecules and cyclins are all modulated by Nef. Their results indicate that by altering the expression of cellular genes, Nef may optimize the cell to support the subsequent stages of HIV-1 replication.

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