molecules in cells. In our program to synthesize the bioactive nucleosides, such as AdoHcy hydrolase inhibitors and cyclic adenosine diphosphoribose(cADPR) analogues, 2'(or 3')-amino-2'(or 3')-deoxyadenosine analogues were prepared conveniently through the key intermediates, 9-(β-D-xylofuranosyl) or 9-(β-D-arabinofuranosyl) adenine, which were synthesized from readily available adenosine via conventional protocols. Compared to other precedent procedures, our synthetic strategy is convenient and versatile as well. In addition, as synthetic precursors for one of classes of AdoHcy hydrolase inhibitors, 5'-chloro-2'(or 3')-amino-deoxyadenosine analogues were prepared starting from 2'(or 3')-azido-2'(or 3')-deoxyadenosine analogues. In this poster, the versatile synthetic procedures and resulting key nucleosides will be presented.

[PD1-71] [10/17/2002 (Thr) 09:30 - 12:30 / Hall C]

Culture of rabbit chondrocytes on the HA-agarose scaffold for artificial cartilage

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Emerging medical technologies for effective and lasting repair of articular cartilage include delivery of cells or cell-seeded scaffolds to a defective site to initiate de novo tissue regeneration. In this respect, the availability of an appropriate biomaterial scaffold is crucial to allow chondrocyte growth and cartilaginous matrix deposition in a three-dimensional geometry. Hyaluronic acid (HA) molecules are anchored to the chondrocyte membrane via receptors, such as CD44. Agarose is a clear, thermoreversible hydrogel but not a natural component of the cartilage matrix. However, agarose was supplemented to HA to obtain desired mechanical properties of scaffold. HA-agarose scaffold is characterized with a highly porous sponge-like structure, with average pore sizes of 200-500mm and interlinked pores. Such a structure is attractive for engineering tissues from isolated cells in vitro, as it can provide a sufficient space for seeding a large cell mass and for the reorganization of the cells into tissue-like structures. Seeding chondrocytes onto the HA-agarose scaffold was efficient due to the hydrophilic nature of the HA and agarose and the rapid wetting of the matrix by the culture medium. Consequently, the cell transport into the matrix pores was maximized, ensuring that the most of the device is uniformly cell-rich. Different techniques such as immunohistochemistry, scanning electron mircroscopy, and MTT assay were used to study the behavior, morphology, phenotype expression, and viability of the chondrocytes in the scaffold. HA-agarose scaffold is expected to be suitable as a biological matrix in three-dimensional chondrocyte cultures.

[PD1-72] [10/17/2002 (Thr) 09:30 - 12:30 / Hall C]

SYNTHESIS OF [1-FLUORO-2,2-BIS-(HYDROXYMETHYL) CYCLOPROPYLMETHYL]PURINES AS ANTIVIRAL AGENTS

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In an effort to search for the chemically and enzymatically stable carbonucleoside, we designed [1'-fluoro-2',2'-bis-(hydroxymethyl) cyclopropyl methyl]purines. The underlying concept for our design is to seek relatively conformationally-locked compound with minimal structural disturbance from acyclic carbonucleoside such as acyclovir or penciclovir. To meet such a requirement, we need to introduce cyclopropane and fluorine moiety. Due to its hybrid character of cyclic and acyclic molecules, cyclopropyl group could render the conformational rigidity to the target molecule. It has also been suggested that a fluoromethylene group is a better isostere of oxygen than the methylene. Therefore, carbocyclic and acyclic derivatives substituted by fluorine at the oxygen position in natural nucleoside are also attractive targets. Herein, we report on the design and syntheses of a series of [1'-fluoro-2',2'-bis-(hydroxymethyl) cyclopropyl methyl]purines in attempts to mimic pencyclovir by installing a fluoro group and a cyclopropyl group.