We present an automatic method for docking inhibitors into enzyme binding sites with computer docking program, QXP(Quick eXPlore). Its search algorithms are derived from the method of Monte Carlo perturbation with energy minimization in Cartesian space. This program is reliable, easy to use and sufficiently rapid for full conformational search for flexible cyclic and acyclic molecules. In this study, inhibitors have been docked into dihydrofolate reductase of different species which plays an important role in the process of DNA replication and is therefore a target for anticancer, antibacterial and antifungal drugs. Docking searches of the energy minimized inhibitors have given rms differences between the docked structures and the X-ray crystal structures, of 0.06 to 1.5 Å. It has also demonstrated that a new inhibitor with biological activity proven experimentally docks well into the active site of the enzyme. The results serve to confirm the reproducibility of the program of the X-ray structures and to provide binding modes for new inhibitors to the target enzymes.

[PC1-11] [10/20/2000 (Fri) 15:30 - 16:30 / [Hall B]]

Development of a dry immunotest strip to detect tetrahydrocannabinoid

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A dry immunochromatography strip was developed to detect tetrahydrocannabinol (THC), a major active ingredient of marijuana. △8-THC-BSA was used as a detection probe on the nitrocellulose membrane where BSA was linked at 8 position of THC. Protein A purified anti-THC monoclonal antibody (isotype: IgG1) was labeled with colloidal gold and the antibody-gold conjugate as a tracer was applied on the glassfiber membrane.
Antibody was titrated to find proper coating concentration of THC-BSA on the microtiter plate and the THC binding reactivity of antibody was tested using a competitive inhibition test with samples containing known amounts of THC. The ELISA result showed the THC standard curve in the range of 2~200 ng/ml with 1 ug/ml of coating concentration.
For the dry immunochromatography test strips, a antibody-gold tracer was tested using △8-THC-BSA on the result line to find the resulting line formation by the antigen-antibody reaction. At the optimized condition, the result indicates that the test strip could detect 1 ug/ml of THC in urine.

[PC1-12] [10/20/2000 (Fri) 15:30 - 16:30 / [Hall B]]

thiols / Fe2+ system-mediated Oxidative Inactivation of brain ecto -5'-nucleotidase

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Ecto-5'-Nucleotidase, was purified from bovine brain membranes, and
subjected to oxidative inactivation. The 5'-nucleotidase activity decreased slightly after the exposure to either glutathione or Fe^{2+}. The glutathione-mediated inactivation of 5'-nucleotidase was potentiated remarkably by Fe^{2+}, but not Cu^{2+}, in a concentration-dependent manner. Similarly, glutathione exhibited a concentration-dependent enhancement of the Fe^{2+} of an intermediary role of superoxide ions or H_2O_2 in the action of glutathione/Fe^{2+} system, superoxide dismutase and catalase expressed a substantial protection against the inactivation by the glutathione/Fe^{2+} system. Meanwhile, hydroxyl radical scavangers such as mannitol, benzoate or ethanol were incapable of preventing the inactivation, excluding the participation of extraneous