of BK were also identified based on inhibiting B_2BK receptors. Applications of this technique include identification of endogenous BK in a lysate of human hepatocellular carcinoma cells (Hep G2) and screening for bioactivity of BK degradation products in human blood plasma. The data demonstrate that the use of antagonists with a single-cell biosensor separation system aids identification of separated components and receptor subtypes.

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France - *In vivo* electrochemical monitoring of serotonin

In J. NEUROCHEM. (65/3 (1257-1263) 1995) J.-P. Rivot, R. Cespuglio, S. Puig, M. Jouvet, J.-M. Besson of INSERM U. report on '*In vivo* electrochemical monitoring of serotonin in spinal dorsal horn with Nafion-coated multi-carbon fiber electrodes'.

The authors constructed biosensors, sensitive for *in vivo* monitoring of serotonin (5-HT) in the CNS by differential normal pulse voltammetry, by coating treated multicarbon fiber electrodes (mCFEs) with Nafion (N-mCFE). *In vitro* sensitivities of mCFE and N-mCFE were compared in solutions ranging from 5 nM to 20 μM of uric acid (UA), 5-hydroxyindoleacetic acid (5-HIAA), and 5-HT. The mCFEs were three to seven times less sensitive for 5-HIAA or UA than for 5-HT. Nafion treatment dramatically decreased sensitivity for 5-HIAA and UA of N-mCFEs (~ 10^3 times), whereas it remained in the nanomolar range for 5- HT. *In vivo*, in the dorsal horn of the lumbar spinal cord of anaesthetized rats, the monoamine oxidase inhibitor clorgyline (10 mg/kg i.p.) produced a reduction (55 ± 3% at 180 min) of peak 3 of oxidation current (characteristic of 5-hydroxyindoles) monitored with mCFEs, but with N-mCFEs (in this latter case the peak was termed 3N) peak 3N increased to 135 ± 5% at 180 min. The 5-HT release-inducer p-chloroamphetamine (PCA; 6 mg/kg i.p.) induced a slight (12 ± 3% at 150 min) decrease in peak 3 measured with mCFEs, whereas with N-mCFEs PCA induced a rapid increase of peak 3N (137 ± 6% at 90 min). The xanthine oxidase inhibitor allopurinol (10 mg/kg i.p.) produced a decrease (30 ± 3% at 180 min) in peak 3 (mCFEs), but peak 3N (N- mCFEs) was not affected (106% at 180 min). After pretreatment with allopurinol, PCA also produced an increase (135 ± 6% at 90 min) in peak 3N. These *in vitro* and *in vivo* data provide evidence for a highly preferential detection of 5-HT versus 5-HIAA and UA by N-mCFEs, which could be used to follow the extracellular 5-HT concentration within very discrete structures throughout the CNS.

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Israel - Improving enzyme-electrode contacts

In NATURE (376/6542 (672-675) 1995) A. Riklin, E. Katz, I. Willner, A. Stocker & A.F. Buckmann of The Hebrew University of Jerusalem report on 'Improving enzyme-electrode contacts by redox modification of cofactors'.

Efficient electron transfer of redox proteins to and from their environment is essential for the use of such proteins in biotechnological applications such as amperometric biosensors and photosynthetic biocatalysts. But most redox enzymes lack pathways that can transport an electron from their embedded redox site to an electrode or a diffusing photoexcited species. Electrical communication between redox proteins and electrode surfaces has been improved by aligning proteins on chemically modified electrodes, by attaching electron-transporting groups and by immobilizing proteins in polymer matrices tethered by redox. Generally these methods involve contacting the groups enzymes at random with electron relay units. The authors report an approach that allows site-specific positioning of electron-mediating units in redox proteins. They strip glucose oxidase of its flavin adenine dinucleotide (FAD) cofactors, modify the latter with redox-active ferrocene-containing groups, and then reconstitute the apoprotein with these modified cofactors. In this way, electrical contact between an electrode and the resulting enzyme in solution is greatly enhanced in a controlled and reproducible way.

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