

O-09: BIOAFFINITY SCREENING OF PLANT EXTRACTS

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For the first time, bioaffinity chromatography using immobilized receptors was applied to the screening of an extract to identify ligands. The 2-dimensional online format allows affinity-based bioguided dereplication, and structural identification by DAD UV-MS. We screened tobacco smoke condensate against $\alpha 3\beta 4$ nicotinic receptor in order to explain the beneficial effects of smoking in some CNS diseases like schizophrenia. Receptors are non-covalently bound on silica-based immobilized artificial membranes. A cationic aqueous extract of tobacco smoke condensate was first depleted of (*S*)-nicotine by molecular imprinted polymer chromatography, then fingerprinted with a RP C_{18} column. The same extract was analyzed in receptor and control columns. Fractions were collected using retention time windows, and fingerprinted. Differences in fingerprint patterns gives two types of information: the absence of peaks in early fractions indicates that the compound is a ligand; the rank of the fraction it is eluted in is an indicator of its relative affinity for the $\alpha 3\beta 4$ receptor. Several compounds have been identified as ligands. The next step is to isolate them and determine their agonist, competitive antagonist or non-competitive inhibitor nature. This method may become a new paradigm for biodiversity-based drug discovery, as it allows targeted pharmacological analysis of extracts, and can be extended to other receptors or tissues to explore pharmacological synergies within extracts.