Z27
Commercially available antidotes of organophosphate poisonings (pralidoxime, obidoxime, methoxime, trimedoxime and HI-6) and newly developed oxime K027 as reactivators of human acetylcholinesterase inhibited by selected organophosphate pesticides

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Organophosphorus pesticides (e.g. parathion, methamidophos) and nerve agents (e.g. tabun, cyclosarin, VX) are chemicals highly toxic to human and other living organisms primarily for their interaction with the enzyme acetylcholinesterase (AChE; EC 3.1.1.7), which takes part in the process of transmission of nerve impulses. Antidotes currently used for organophosphate (OP) intoxications consist of a combination of prophylaxis with carbamates (mostly pyridostigmine) and therapy with anticholinergics (e.g. atropine) and AChE reactivators (e.g. pralidoxime, obidoxime). We tested the ability of currently used oxime reactivators (pralidoxime, methoxime, trimedoxime, trimedoxime and HI-6) and newly developed oxime K027 to reactivate AChE inhibited by different OP pesticides. Reactivation potency was estimated *in vitro* using 100 μM and 10 μM oxime concentrations. Paraoxon, dichlorvos, diisopropylfluorophosphate, leptophos-oxon and methamidophos were used as suitable model OP inhibitors of human erythrocyte AChE. Our results demonstrated that the best broad-spectrum AChE reactivators (after 10 min of reactivation) were trimedoxime and obidoxime. Both oximes reached more than 50% of reactivation ability in the case of paraoxon, leptophos-oxon and methamidophos-inhibited AChE, followed by oxime K027. Methamidophos-inhibited AChE was quite easily reactivatable by all tested reactivators.

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Z28
Evaluation of C57Bl/6 mice for motor abnormalities and Parkinson-patterned neuropathology after Paraquat and Maneb exposure at human-relevant doses

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C57Bl/6 mice were dosed daily from PND 5–19 (0.3/1.0 mg/kg PQ/MB) and/or twice weekly from week 28–31 of age (10/30 mg/kg PQ/MB), the levels reported in the literature to cause loss of substantia nigra cells. This high dose was reduced to 5/15 mg/kg PQ/MB following marked clinical reaction in naïve adult males after three injections, leading to termination for welfare reasons. Additionally, two other doses were derived from human PQ exposure models and were administered as a middle dose (0.06/0.18 mg/kg PQ/MB preweaning, 0.6/1.8 mg/kg PQ/MB adult) and a low dose (0.0007/0.002 mg/kg PQ/MB preweaning and adult) representing exposure levels relevant to humans. Animals dosed preweaning only, as adults only, or both, were tested for motor activity and arena behaviour at 32 weeks, and then evaluated for neuropathology at 33 weeks. One additional group dosed preweaning and as adults was retested at 62 weeks and sacrificed at 70 weeks of age. There was an increased incidence of tremors in the high dose males at 32 weeks of age, but not at 62 weeks of age, inconsistent with a progressive disease state. In the 1 h motor activity testing, there was an increase in ambulatory activity and rearing in high dose females at 62 weeks of age only. Staining with GFAP and silver did not detect any degenerative response related to treatment across the entire brain at either 33 or 70 weeks of age in either gender. Stereological analysis and quantitation of TH+ neurons in the substantia nigra is ongoing.

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Z29
Investigation of the role of glutathione S-transferase isozymes in pyrethroid resistance of *Helicoverpa armigera* in Turkey

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Helicoverpa armigera, cotton bollworm, is one of the insects causing severe yield loss of economically important crops including cotton, legumes and vegetables. It has developed resistance against the pyrethroid insecticides that have been introduced into market. Resistance against pyrethroids have been reported in *H. armigera* populations at various parts of the world, however, except 1-chloro-2,4-dinitrobenzene substrate (CDNB), almost no any other substrates used for analysis of the role of glutathione S-transferases (GST) in pyrethroid resistance of *H. armigera*.

In this study, in addition to CDNB, GST activities were determined using 4-nitrobenzylchloride (PNBC), 3,4-dichloronitrobenzene (DCNB) and 1,2-epoxy-3-(*p*-nitrophenoxy)propane