

## Oxidative stress in Parkinson disease

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Parkinson disease (PD) is a slowly progressive degenerative neuronal disorder comprising combinations of motor problems like bradykinesia, tremor-at-rest and muscle rigidity. Its major characteristic is the selective degeneration of the nigrostriatal pathway. PD is a multifactorial disease; both genetic and environmental factors could play important role in its pathogenesis. From environmental factors the mitochondrial complex I. inhibitor pesticide rotenone has remarkable significance. PD and other chronic neurodegenerative diseases which are characterized by a selective loss of distinct groups of neurons, have a common pathomechanism, since oxidative stress and dysregulation of transmitter release play a central, but not initiative role in the development of the disease. One of the most effective therapy target is the monoamin oxidase, besides some compounds with antioxidant properties are seem to be neuroprotective in experimental PD model. The ideal drug decreases the level of pathological free radical production as a monoamin oxidase inhibitor, and via its antioxidant capacity, it also decreases the level of already existing reactive intermediers.

Our goal was to identify compounds combining these two properties, thus having significantly higher neuroprotective effect than the currently used drugs.

We set an *in vitro* system to screen numerous multitarget drug candidates. PC12 cells were treated with rotenone, the protective effect of the various compounds on cell survival was determined.

From the reference drugs we found significant neuroprotection by deprenyl and rasagiline, and severe neurotoxicity by L-Dopa. Up to this point the majority of the tested compounds did not achieved the level of neuroprotection rendered by deprenyl or rasagiline. However some compounds attained significant neuroprotection in the rotenone model.

The screening of numerous compounds can be realized quickly and dependably with the *in vitro* Parkinson model. It is suitable for identifying drug candidates that have even greater neuroprotective effect, than the currently used drugs.

## Examination of oxidative stress markers and liver function after open- and transgastric small bowel resection

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In Natural Orifice Transluminal Endoscopic Surgery (NOTES) a flexible endoscope is passed through a natural orifice (transgastric, transvaginal, transanal, transvesical) of the body and intra-abdominal procedures can be performed. Experimental data shows that this new procedure can reduce surgical trauma and intraabdominal adhesion formation is minimal. The technique without visible scar launched a new trend in surgery, which is no-scar surgery.

The aim of this study was to compare surgical trauma after open- and transgastric small bowel resection.

Within the framework of EURO-NOTES research program, with co-workers of Markus-Krankenhaus Surgical Clinic (Frankfurt am Main, Germany) transgastric (TG=7) and open small bowel (O=6) resection was performed on pigs. Oxidative stress marker concentrations (malondialdehyde (MDA), glutathione (GSH), SH-groups (SH-), superoxide-dismutase (SOD), liver enzyme (glutarate-oxalacetate-transaminaze (GOT), glutamate-piruvate-transaminaze (GPT), laktate-dehidrogenaze (LDH), gamma-GT (GGT), alkalic-phosphatase (ALP)) and total bilirubin (SeBi) concentrations were measured. Blood samples were taken before operation, at the end of operation, on first, third and on seventh postoperative day for biochemical tests.

There were no complications during surgery, all pigs survived. Oxidative stress marker concentrations were increased after operations in both group and decreased postoperatively. GOT, GPT, LDH, SeBi concentrations were increased after operation and decreased postoperatively in both groups. GGT and ALP concentrations were decreased during on monitoring days also in both groups. There was no significant difference between the two groups in concentration.

Transgastric approach means similar surgical stress like open technique. Further examinations are needed with a larger number of pigs and sensitive parameters.