

Meeting abstract

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## Neuroprotection and enhanced neurogenesis by extract from the tropical plant *Knema laurina* after inflammatory damage in living brain tissue

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Inflammatory reactions in the CNS, resulting from a loss of control and involving a network of non-neuronal and neuronal cells, are major contributors to the onset and progress of several major neurodegenerative diseases. Therapeutic strategies should therefore keep or restore the well-controlled and finely-tuned balance of immune reactions, and protect neurons from inflammatory damage. In our study, we selected plants of the Malaysian rain forest by an ethnobotanic approach, and investigated them in cell-based-assay-systems and in living brain tissue cultures in order to identify anti-inflammatory and neuroprotective effects. We found that extracts from the tropical plant *Knema laurina* (Black wild nutmeg) exhibited highly anti-inflammatory and neuroprotective effects in cell culture experiments, reduced NO- and IL-6-release from activated microglia cells dose-dependently, and protects living brain tissue from microglia-mediated inflammatory damage. On the intracellular level, the extract inhibited ERK-1/2-phosphorylation, I-kappaB-phosphorylation and subsequently NF-kappaB-translocation in microglia cells. *Knema laurina* belongs to the family of Myristicaceae, which have been used for centuries for treatment of digestive and inflammatory diseases and is also a major food plant of the Giant Hornbill. Moreover, extract from *Knema laurina* promotes also neurogenesis in living brain tissue after oxygen-glucose deprivation. In conclusion, extract

from *Knema laurina* not only controls and limits inflammatory reaction after primary neuronal damage, it promotes moreover neurogenesis if given hours until days after stroke-like injury in levels comparable to the best neurotrophic factors known today.