

Publication

Honeybush extracts (*Cyclopia* spp.) rescue mitochondrial functions and bioenergetics against oxidative injury**JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4604293**Author(s)** Agapouda, Anastasia; Butterweck, Veronika; Hamburger, Matthias; De Beer, Dalene; Joubert, Elizabeth; Eckert, Anne**Author(s) at UniBasel** [Hamburger, Matthias](#) ; [Agapouda, Anastasia](#) ;**Year** 2020**Title** Honeybush extracts (*Cyclopia* spp.) rescue mitochondrial functions and bioenergetics against oxidative injury**Journal** Oxidative Medicine and Cellular Longevity**Volume** 2020**Pages / Article-Number** 1948602**Mesh terms** Antioxidants, therapeutic use; Energy Metabolism, drug effects; Humans; Mitochondria, drug effects; Oxidative Stress, drug effects; Plant Extracts, chemistry

Mitochondrial dysfunction plays a major role not only in the pathogenesis of many oxidative stress or age-related diseases such as neurodegenerative as well as mental disorders but also in normal aging. There is evidence that oxidative stress and mitochondrial dysfunction are the most upstream and common events in the pathomechanisms of neurodegeneration. *Cyclopia* species are endemic South African plants and some have a long tradition of use as herbal tea, known as honeybush tea. Extracts of the tea are gaining more scientific attention due to their phenolic composition. In the present study, we tested not only the in vitro mitochondria-enhancing properties of honeybush extracts under physiological conditions but also their ameliorative properties under oxidative stress situations. Hot water and ethanolic extracts of *C. subternata*, *C. genistoides*, and *C. longifolia* were investigated. Pretreatment of human neuroblastoma SH-SY5Y cells with honeybush extracts, at a concentration range of 0.1-1/ml, had a beneficial effect on bioenergetics as it increased ATP production, respiration, and mitochondrial membrane potential (MMP) after 24 hours under physiological conditions. The aqueous extracts of *C. subternata* and *C. genistoides*, in particular, showed a protective effect by rescuing the bioenergetic and mitochondrial deficits under oxidative stress conditions (400 μ M H₂O₂ for 3 hours). These findings indicate that honeybush extracts could constitute candidates for the prevention of oxidative stress with an impact on aging processes and age-related neurodegenerative disorders potentially leading to the development of a condition-specific nutraceutical.

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