

Kenyan Purple Tea Anthocyanin's Ability to Cross the Blood Brain Barrier Reinforcing Brain Antioxidant Capacity in Mice.

K. Rashid¹, F.N. Wachira², R.M. Ngunjiri¹, J.N. Nyabuga¹, B. Wanyonyi³,
G. Murilla³ and **A.O. Isaac⁴**

¹Egerton University, Biochemistry and Molecular Biology Department, ²Tea Research Foundation of Kenya, ³Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA),

³Trypanosomiasis Research Centre, Kenya Agricultural Research Institute, ⁴**Department of Pharmaceutical Sciences and Technology, Technical University of Kenya**

Abstract

Studies on antioxidants as neuroprotective agents have been hampered by the impermeability of the blood brain barrier (BBB) to many compounds. However, previous studies have shown that a group of tea (*Camellia sinensis*) flavonoids, the catechins, are brain permeable and neuroprotective. Despite this remarkable observation, there exists no data on the bioavailability and pharmacological benefits of tea anthocyanins (ACNs) in the brain tissue. This study investigated the ability of Kenyan purple tea ACNs to cross the BBB and boost the brain antioxidant capacity. Mice were orally administered with purified and characterized Kenyan purple tea ACNs or a combination of Kenyan purple tea ACN's and coenzyme-Q10, at a dose of 200 mg kg⁻¹ body weight in an experiment that lasted for 15 days. Twenty four hours post the last dosage of antioxidants, CO2 was used to euthenise the mice. Then the brain was excised and used for various biochemical analyses. Kenyan purple tea ACNs significantly (P<0.05) raised brain Glutathione (GSH) levels, implying a boost in brain antioxidant capacity. Notably, ACN metabolites were detected in brain tissue of ACN fed mice. This is the first demonstration that Kenyan purple tea ACNs can cross the BBB, reinforcing the brain's antioxidant capacity. Hence, there is need to study ACNs as suitable candidates for dietary supplements that could support antioxidant capacity in the brain and have potential to provide neuroprotection in neurodegenerative conditions.

Keywords: Coenzyme-Q10, Glutathione, neuroprotective.

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