A COMPARISON OF TOTAL ANTIOXIDANT CONTENT AND ACTIVITY OF 4 COMMERCIALY AVAILABLE SOUTH AFRICAN TEAS AND THEIR PROTECTION AGAINST OXIDATIVE DAMAGE

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Oxidative stress due to reactive oxygen species (ROS) and free radicals cause extensive damage to DNA, proteins and lipids, contributing to aging and degenerative diseases such as cancer, cardiovascular disease and diabetes. Tea is abundant in polyphenolic compounds, particularly flavonoids, which are antioxidants that offer protection by various mechanisms that involve suppressing ROS, scavenging ROS, and by protecting antioxidant defences. The antioxidant content and activity and of 4 commercially available teas were determined, as well as their ability to protect against oxidative damage in a cellular environment. Total polyphenolic (TPC) and flavonoid (TFC) content was determined by Folin-Ciocalteu and aluminium chloride assays, respectively, whereas antioxidant activity was determined by DPPH radical scavenging, TEAC and ORAC assays. Oxidative damage was determined by Caco-2 cell models. Black tea had the highest antioxidant content (105.35 mg GAE/g; 89.87 mg CE/g), followed by green tea (83.33 mg GAE/g; 71.67 mg CE/g), unfermented Rooibos tea (51.70 mg GAE/g; 68.56 mg CE/g), and fermented Rooibos tea (38.89 mg GAE/g; 59.30 mg CE/g). The same trend was observed in the TEAC and ORAC assays, whereas in the DPPH assay green tea had the highest antioxidant activity (129.88 mg TE/g), followed by black tea (125.68 mg TE/g), unfermented Rooibos tea (64.30 mg TE/g), and fermented Rooibos tea (46.20 mg TE/g). Teas did not differ significantly in protection against oxidative damage on a cellular level, offering 80% or more protection against oxidative damage, proving the effectiveness of tea as antioxidants that should be consumed as part of a healthy balanced diet.