

The cactus fruit belongs to the *Cactaceae* family and is native to the arid and semi-arid regions of the world, where the production of more succulent food plants is severely limited. *Opuntia stricta* Haw, fruits have recently invaded the harsh dry rangelands of the Laikipia Plateau of North-eastern Kenya. These cactus fruits contribute immensely to the nutrition and food security needs of humans living in Laikipia. Despite the health benefits of these fruits, the cactus plant faces the possibility of extinction due to adverse effects of the prickly fruit when ingested by the livestock belonging to the local communities in Laikipia. The present study, therefore, was designed to assess the chemical composition, bioactive compounds and their health promoting properties in *Opuntia stricta* cactus fruits. The results showed that the cactus pulp is a rich source of ascorbic acid (60 mg/100 g), minerals (622 mg/kg P, 12.8 mg/kg Ca, 38 mg/kg Fe and 91 mg/kg Na), and sugars (18.5 mg sucrose, 10.9 mg glucose and 6.9 mg fructose). The seeds contained significant amount of protein (4.13%), oil (11.5%), fibre (12.3%),  $\beta$ -carotene (56  $\mu$ g/100 g) and total carotenoids (289  $\mu$ g/100 g). The seed oil contained high levels of linoleic (70%), palmitic (12.5%) and stearic (12.3%) acids. The main fatty acids were linoleic, oleic, palmitic and stearic acids with high unsaturation level (83%). The principal amino acids in the fruits were arginine, tyrosine, glutamic acid, proline and aspartic acid. The cactus whole fruits exhibited remarkable levels of total phenols (1.6 g/100 g), flavonoids (197 mg/100 g), tannins (1.5 g/100 g) and phytates (2.6 g/100 g). The phytochemical extracts demonstrated high antioxidant activity in terms of FRAP assay (1.2-6.9  $\mu$ g/mM Fe (II) reducing power) and DPPH assay (73-86%). The anti-diabetic effect of the extracts showed strong inhibition (>50%) of  $\alpha$ -glucosidase as compared to the  $\alpha$ -amylase inhibition. Thus, consumption of *O. stricta* fruits could meet the key nutritional requirements and help to address the double burden of food insecurity and chronic diseases among communities living in the drylands of Kenya. The results of this study could help inform the public on the nutritional and health benefits of the *Opuntia* cactus fruit and address issues raised by the media on the possible eradication of cactus plants in Laikipia and other drylands regions of Kenya.