

## Abstract

Cowpea leaves (*Vigna unguiculata*) are highly consumed in Africa because the plant is easy to cultivate and highly disease/drought tolerant. The vegetables are harvested between 4 and 9 weeks of maturity. The objectives of this study were to (i) investigate the effect of vegetable maturity on total folate content, poly- $\gamma$ -glutamate profile and mineral content and (ii) evaluate the effect of thermal treatments on folate stability and its poly- $\gamma$ -glutamate profile changes. The total folate content and the folate poly- $\gamma$ -glutamate chain length increased with increasing maturity of the vegetables. Folate occurred predominantly as tri- $\gamma$ -glutamates (55%); chain lengths of up to tetra- $\gamma$ -glutamates (14%) for 4-week-old vegetables. For 6- and 8-week-old vegetables, they occurred mainly as penta- $\gamma$ -glutamates (78 and 60% respectively); chain lengths of up to hexa and hepta- $\gamma$ -glutamates respectively. On crushing raw vegetables, at all stages of maturity, there was enzymatic conversion to short chain folate poly- $\gamma$ -glutamates indicating the presence of endogenous  $\gamma$ -glutamyl hydrolase. Heating (30–70 °C for 10 min) affected the stability and profile of folates. There was a general decline (>60%) in the levels of minerals during maturation of the vegetables. In conclusion, the maturity stage is an important factor in optimizing the type and quantity of these micronutrients.