The pumpkin is a vegetable which is healthy and functional, being rich in phenolic compounds, flavonoids and vitamins, and has a low energy content. However, cooking can influence the retention of nutrients and phytochemicals in foods. This study aimed to evaluate and compare changes in the functional components of squash submitted to different cooking methods. The experiment involved four types of cooking: boiling, steaming, microwave and sous-vide. Measurements were made of ascorbic acid, yellow flavonoids, total anthocyanins, total carotenoids and polyphenols. The values obtained for ascorbic acid ranged from 7.13-7.23 mg 100 g⁻¹; flavonoids from 9.31-13.73 mg 100 g⁻¹; anthocyanins from 0.74-1.60 mg 100 g⁻¹; carotenoids from 8933.92-24772.72 mg 100 g⁻¹; polyphenols 21.08-30.25 mg GAE 100 g⁻¹. All cooking methods reduced about 50% of ascorbic acid. The methods of cooking boiling, steaming, microwave and sous-vide caused losses of flavonoids, the greatest loss occurring in the sous-vide cooking, 30.27%. The sous-vide cooking also caused a loss of 54.37% in the content of anthocyanins. The methods of cooking in steam and sous-vide caused losses in the content of carotenoids, being attributed to degrading factors during processing (light and heat). However, boiling and cooking in the microwave preserved this important compound, indicating better nutritional characteristics. All methods of cooking caused high losses in polyphenols. Cooking in the microwave is the preferred method to enhance the potential of obtaining functional components of pumpkin, as it can reduce the degradation of flavonoids yellow and increase the content of carotenoids, and thus maintain quality.