Phytosterols are the major constituents of unsaponifiables present in all oils and fats, forming the main source of sterols in a consumer diet. Conversely, they are susceptible to oxidation by reactive oxygen species, light, and high temperatures, leading to the formation of phytosterol oxidation products (POPs). The aim of this study was to investigate the presence of phytosterol oxides in corn oil samples consumed in Brazil, in nature and after heating at 180°C, in electric fry pan, during three minutes. Six samples of two different commercial brands (A and B) were obtained from a local market in Sao Paulo, Brazil. Phytosterol oxides were obtained through direct saponification with posterior derivatization. The trimethylsilyl (TMS) derivates were injected in GC-MS Focus GC coupled to ion trap mass-selective detector (Polaris Q, Thermo Finningan). Phytosterol oxides were separated using a Factor Four V5ms column (60 m x 0.25 mm i.d., 1.0 mm film thickness). Identification and quantification of the oxides were made using selected ion monitoring (SIM) analysis. Levels of POPs were quantified by calibration curve, using cholesterol oxides standards at levels of 5-350 µg/mL. In this study, in raw and frying samples fourteen phytosterol oxides were obtained: Campesterol-5α,6β-epoxide; Campesterol-5β,6β-epoxide; 7α-Hydroxycampesterol; 7β-Hydroxycampesterol; 7-Ketocampesterol; Sitosterol-5α,6β-epoxide; Sitosterol-5β,6β-epoxide; 7α-Hydroxysitosterol; 7β-Hydroxysitosterol; 7-Ketositosterol; Stigmasterol-5α,6β-epoxide; 7α-Hydroxystigmasterol; 7β-Hydroxystigmasterol and 7-Ketostigmasterol. The total of oxides levels (in dry basis, µg/g) varied from 22.93±0.1 to 61.32±0.2 in brand A, and from 14.41±0.2 to 66.44±0.2 in brand B. Results indicated that processing and pan frying are important factors in phytosterol oxides formation in corn oil samples.