Neuroactive Beta-Carbolines in Arabica and Robusta Coffee

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SUMMARY

The concerns about potential coffee health risks have contributed to inumerous reports in literature, mostly based on epidemiological studies. However, in most cases, the results are conflictive and general conclusions are still difficult to take. On the other hand, coffee consumption has been recently associated with reduction in the risk of several chronic diseases, namely Parkinson's disease. However caffeine does not seem to be the key factor in this case. The possible involvement of beta-carbolines found in coffee, a class of neuroactive compounds, is a new possibility. Based on above facts, our purpose was to determine the beta-carboline amounts in arabica and robusta coffee beans from several geographical origins. Several roasting degrees were evaluated in all samples, since the amounts of these compounds are known to increase with temperature. A total of 10 arabica and 7 robusta coffee samples were analyzed, both in green beans and after three different roasting degrees, in a total of 68 samples. The compounds (harman and norharman) were extracted by SPE and quantified by HPLC/FLD with a suitable internal standard. Adequate statistical treatments were applied to the data obtained. The results clearly demonstrate that these compounds are formed during the roasting procedure since their content is low in the green beans and increases with the roasting intensity. Robusta beans always presented higher amounts of the two compounds than arabica ones. The mean levels found were 6 and 2 mg/kg for norharman and harman, respectively, and they show that coffee is, probably, one of the most important human sources of these compounds.