

Abstract

AIMS:

Dihydropyrimidine dehydrogenase (DPD) reduces endogenous pyrimidines and therapeutic analogues such as the anticancer agent 5-fluorouracil (5FU). Among Caucasian populations DPD activity is highly variable and subject to polymorphic regulation. To evaluate interethnic influence, DPD activity was assessed in South-west Asian, Kenyan and Ghanaian populations.

METHODS:

DPD activity was determined in peripheral mononuclear cells using [14C]-5-fluorouracil and h.p.l.c. analysis.

RESULTS:

A high degree of variation in DPD activity was observed within each population (range CV = 34-48%). Median DPD activity also varied between these populations. South-west Asian and Kenyan subjects exhibited almost identical median values (192 and 193.5 pmol min⁻¹ mg⁻¹), respectively), which were similar to Caucasians (median 215 pmol min⁻¹ mg⁻¹). A significantly lower median DPD activity (119 pmol min⁻¹ mg⁻¹) was observed in the Ghanaian population.

CONCLUSIONS:

The similarity in DPD activity between Caucasian, Kenyan and South-west Asian populations suggests that the incidence of 5FU-related toxicity may be comparable in these groups. The pharmacokinetic implications of lower activity amongst Ghanaians needs to be evaluated.