

Taste Sensitivity to 6-N-Propylthiouracil (Prop) in Population of the Archipelago of Cabo Verde

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KEY WORDS: 6-n-Propylthiouracil, PTC bitterness, taste sensitivity, Cabo Verde.

Introduction

In migration investigation Cape Verdeans can be of anthropological interest. This population since XVth, was made up of Portugueses, Europeans and slaves of the African coast. Nowadays 80 per cent of the population is mestizo, 17 per cent black and 3 per cent white. To determine if the genetic heritage of Cabo Verde islands is mainly of European or African origin we analyzed taste blindness to 6-n-propylthiouracil (PROP).

Materials and Methods

Subjects

The subjects were 100 Cape Verdeans individuals (age range 8-39 years), and 432 Italians (8-78 aging). All were normal-weight in good physical health.

Taste Stimuli

Rather than detecting the genetically mediated sensitivity to phenylthiocarbamide (PTC) we used its chemical relative, 6-n-propylthiouracil (PROP) whose taste detection thresholds were consistent with PTC's ones and whose toxicity is almost negligible ((DL₅₀ 1250 mg/Kg of PROP versus DL₅₀ 3 mg/Kg of PTC). (Bartoshuk, 1994; Guo and Reed, 2001; Lepori, 2002).

Taste stimuli included filter papers impregnated with four different concentrated solutions of 6-n-propylthiouracil (PROP). The concentrations of PROP were: 0,02 ‰ (1), 04 ‰ (2), 0,08 ‰ (3), 0,12 ‰ (4).

Solutions (3), (4) were consistent with prior traditional studies (Drewnowski et al., 1997; Drewnowski et al., 2001). After the screenings on Capoverdians, the results were compared with the date on Italians, Europeans and Africans.

Statistics

Statistical tests were conducted using SPSS.

Results

With the traditional solutions of PROP/PTC the majority of Cape Verdean individuals (68%) perceive bitterness of 6-n-propylthiouracil (PROP)), as moderately-to-extremely bitter (Fig. 1). The only statistical difference between Cape

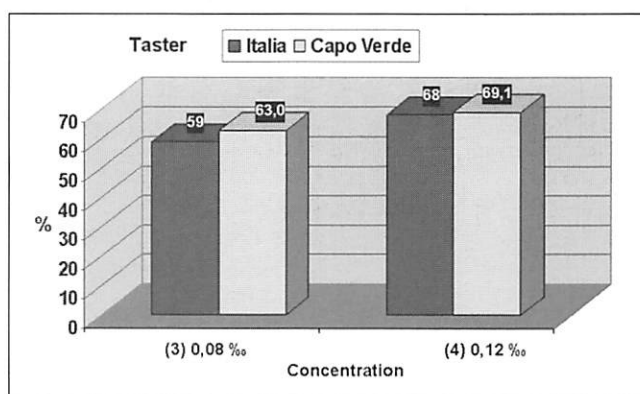


Fig. 1. No statistical difference between Capoverdian tasters and Italian tasters with the traditional solutions of PROP.

Verdeans and Italians was detected among people aging 10-20 years and using very low solution: concentration 0,02 ‰ ($\chi^2 = 41,11$ P = $1,44 \cdot 10^{-10}$) and 04 ‰ ($\chi^2 = 12,858$ P = $3,360 \cdot 10^{-4}$) (fig. 2a, fig. 2b). This result is probably due to the age whose importance was detected also by Barnicot et al. (1975), by Mojet et al. (2001), by Hoffman et al. (1998), by Akcasu (1974) and by Whissell-Buechy (1990). There is no statistical difference with Italian (69,7%) and European tasters (~ 70%) (Akcasu, 1974; Guo and Reed, 2001; Mitchell, 1977).

Quite different is the comparison with bibliographic data on African population (the incidence of taste blindness to PROP is about 3% in western Africa i.e. 97% tasters) (Barnicot and Woodburn, 1975; Jenkins, 1965; Rife, 1953; Scott-Emuakpor et al., 1975).

Discussion

Such findings on genetic markers of PROP do suggest that the Cape Verdeans, in spite of their unique cultural identity influenced by many countries but especially by West Africa, are biologically nearer to European populations.

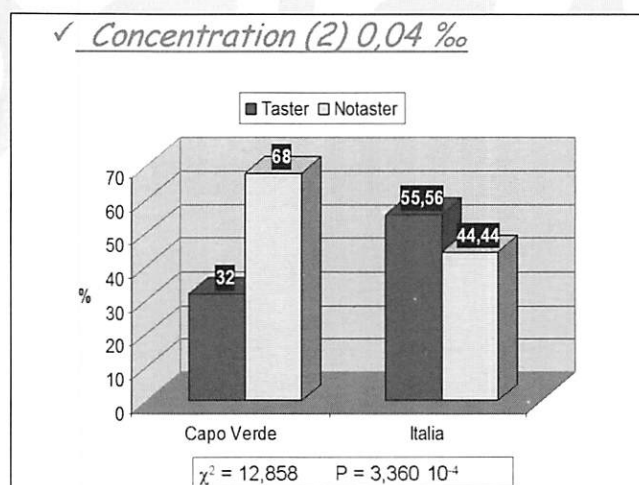
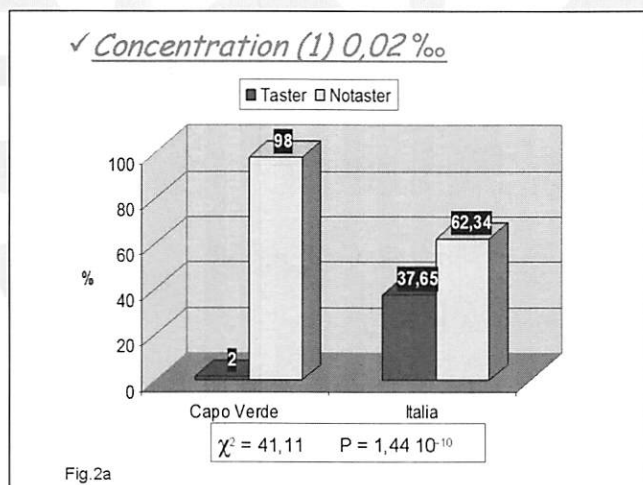


Fig. 2a,b. Capoverdians versus Italians. Low concentrations. Subjects 10-20 years old.

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