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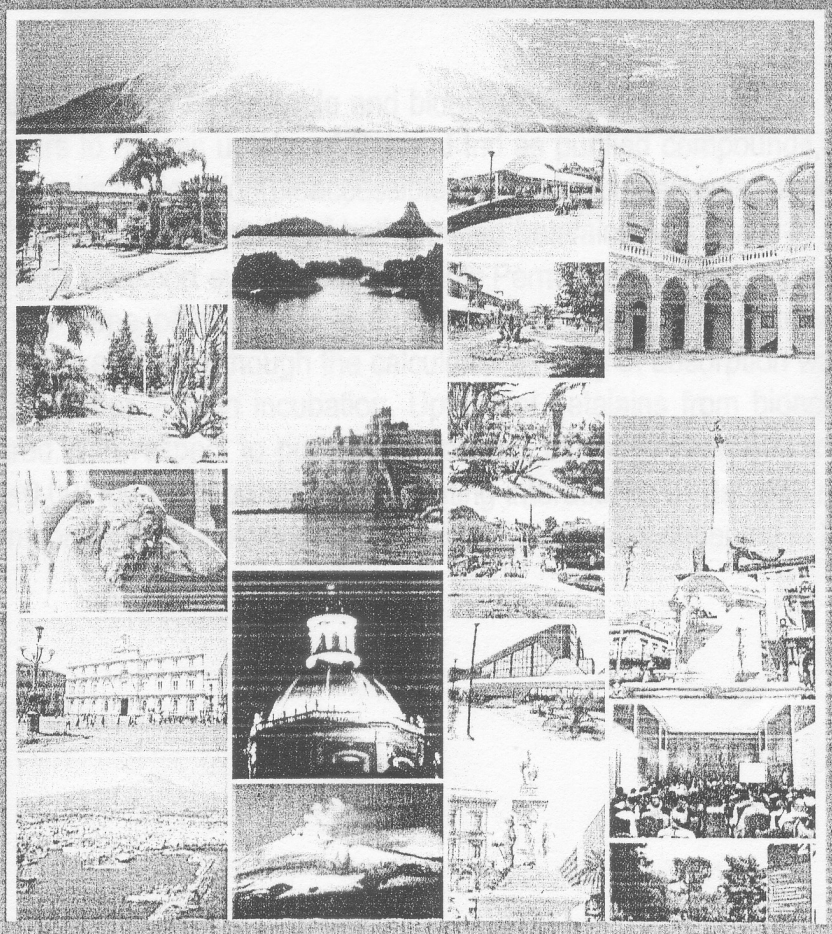

UPTAKE OF BETANIN AND INDICAXANTHIN BY CACO-2 CELL MONOLAYERS

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Betanin (Bet) and Indicaxanthin (Ind) are bioavailable and bioactive dietary pigments.This study used Caco-2 human intestinal cell monolayers to assess uptake of Bet and Ind as purified compounds,and from betalainic foods after simulated gastrointestinal digestion(bioaccessible fraction). Experiments carried out under initial velocity conditions,showed that the rate of uptake of both purified betalains was linear in the 25-200 microM range,indicating a trans-epithelial transport system not saturable.Permeability of Ind appeared 1.5 fold higher than Bet,as indicated from the slope of the linear response.Kinetic studies of uptake with either pigment indicated a much more rapid uptake of Ind,although the calculated efficacy of absorption was identical for both betalains(0.9±0.08%,$p<0.01$,n=5)after 20 min incubation. Uptake of betalains from bioaccessible fraction of betalainic foods was measured.With respect to purified compounds,the absorption efficacy of Bet,but not of Ind,is strongly decreased ($p<0.001$)by the food matrix,suggesting interactions of Bet with matrix components. Present data may provide a rationale for the bioavailability of the two betalains observed in humans.