

DERMAL TRANSMISSION OF BISPHENOL A IN HUMANS FROM THERMAL RECEIPT PAPER

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Background and Aims: Bisphenol A (BPA) is a known endocrine disrupting chemical that can be found in > 90 % of Americans. BPA exposure is often from sources of polycarbonate water bottles, dental sealants and canned food products. Pharmacokinetic data in humans do not account for all of the circulating BPA levels that are present. Recent reports suggest that dermal absorption of BPA through contacting thermal paper could be contributing to circulating BPA levels in people. We hypothesized that a single handling of thermal receipt paper leads to trans-dermal exposure to BPA and that there will be measurable amounts in blood and urine.

Methods: Our specific objectives are to 1) examine the amount of BPA in thermal receipt paper, 2) evaluate how much is transferred onto the skin and 3) determine whether human dermal exposures to BPA lead to an increase in serum and urine BPA. BPA (unconjugated and conjugated) will be measured in serum of 25 males and 25 female volunteers before and one hour after touching receipt paper.

Results: The preliminary findings suggest that thermal receipt paper is coated with milligram amounts of free BPA in a 2-inch sample strip. Observations made after touching a receipt for a mere 10 seconds concluded that the skin adsorbed BPA. Additionally, exposure increases with length of time. There appears to be a direct relationship based on the time held and amount an individual is exposed.

Conclusions: Our preliminary findings show that there could be significant trans-dermal exposure to BPA that might escape rapid first pass metabolism. Leaching of BPA from receipts should be researched further because BPA is a ubiquitous endocrine disrupting chemical that can pass through the skin. We expect that results from this study will show that dermal exposure is a major pathway of human exposure, especially for cashiers.