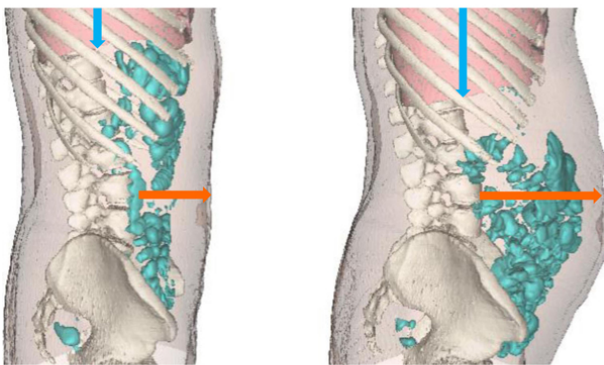


# Abdominal distension after eating lettuce: The role of intestinal gas evaluated in vitro and by abdominal CT imaging

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Some patients complain that eating lettuce, gives them gas and abdominal distention. Our aim was to determine to what extent the patients assertion is sustained by evidence. An in vitro study measured the amount of gas produced during the process of fermentation by a preparation of human colonic microbiota (n = 3) of predigested lettuce, as compared to beans, a high gas-releasing substrate, to meat, a low gas-releasing substrate, and to a nutrient-free negative control. A clinical study in patients complaining of abdominal distention after eating lettuce (n = 12) measured the amount of intestinal gas and the

morphometric configuration of the abdominal cavity in abdominal CT scans during an episode of lettuce-induced distension as compared to basal conditions. Gas production by microbiota fermentation of lettuce in vitro was similar to that of meat (P = .44), lower than that of beans (by  $78 \hat{\pm} 15\%$ ; P < .001) and higher than with the nutrient-free control (by  $25 \hat{\pm} 19\%$ ; P = .05). Patients complaining of abdominal distention after eating lettuce exhibited an increase in girth ( $35 \hat{\pm} 3$  mm larger than basal; P < .001) without significant increase in colonic gas content ( $39 \hat{\pm} 4$  mL increase; P = .071); abdominal distension was related to a descent of the diaphragm (by  $7 \hat{\pm} 3$  mm; P = .027) with redistribution of normal abdominal contents. Lettuce is a low gas-releasing substrate for microbiota fermentation and lettuce-induced abdominal distension is produced by an uncoordinated activity of the abdominal walls. Correction of the somatic response might be more effective than the current dietary restriction strategy.