

Proteomic Analysis of Raw and Roasted *Arachis hypogaea* Seeds

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During thermal processing, peanut storage proteins react to produce advanced glycation end products (AGEs). Three major peanut allergens (encoded by the genes *arah1*, *arah2*, and *arah3*) are extensively modified during thermal processing producing AGEs. Raw peanuts were heat treated and analyzed by bottom-up LC-MS/MS proteomics, conducted by the Proteomics Resource Center at the Rockefeller University, to determine how the time and temperature variables influenced the formation of AGEs on peanut allergens. Proteomic data revealed the relative abundance of proteins present throughout the roasting process. The results indicated the optimal roasting time for product formation. Evidence of lysine carboxymethylation, carboxyethylation, and, to a lesser extent, pyrrolation were observed to increase upon time of heat exposure. Results suggest that the storage proteins are glycated as a function of roasting time, generating reaction products which impart the characteristic roasted peanut flavor.