

Raspberry Allergen and Rosaceae Family Member Allergens: Clinical and Cellular Responses

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Dear Editor,

THE ROSACEAE FAMILY of berries and fruits includes the fruits raspberries and boysenberries (Hassan and Venkatesh 2015). Based on a clinical review of data from 2015 to 2016, 38,408 children were included for analysis to determine the incidence of food allergies. Among this population, food allergy was found among 7.6% of the children, and 40% among these subjects had multiple food allergies. When the specific food allergens were analyzed, berries were not found on the list of common food allergies (Gupta and others 2018). In clinical practice, there have been reports of suspected or confirmed berry allergic responses, but the reports are relatively uncommon (Sherson and others 2003; Ciprandi and Tosca 2014).

Two recent studies based on animal models and cellular experiments may provide a possible mechanism for this finding. The first study investigated whether water extracts of *Rubus coreanus* (a family of black raspberries) reduced serum histamine release and mortality in a dose-dependent manner, in a rat model of anaphylaxis (Kim and others 2012).

The authors also studied human mast cells in culture and found that the extracts reduced histamine release and intracellular calcium levels. In addition, based on cell line investigation, the gene expression of key inflammatory cytokines such as tumor necrosis factor- α , interleukin (IL)-1 β , and IL-6 was reduced in the presence of the extracts. Culture supernatant analysis by enzyme-linked immunosorbent assay confirmed that the secretion was inhibited. The study also reported that nuclear factor- κ B regulation was altered in the presence of the berry extracts and results in reduced activation and reduced downstream expression of inflammatory cytokines (Kim and others 2012).

In another study, a murine model of OVA-albumin-induced airway inflammation studied the effects of boysenberry juice. The findings indicated that there was an amelioration of airway inflammation, less collagen deposition, and increased matrix metalloproteinase-9 and arginase positive lung macrophages among the animals receiving boysenberry

juice, compared with control animals. The authors concluded that boysenberry ingestion supports fibrinolytic macrophage activity and reduces the deposition of collagen in the airway (Shaw and others 2015).

Taken together, these studies are promising in identifying the anti-inflammatory properties of the Rosaceae members, and the results warrant further investigation. The findings of these studies and others suggest that there may be future therapeutic targets identified in this important area of inflammation and lung remodeling research.

References

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