Commentary

Salicylate elimination diets in children

With suitable guidance and monitoring, dietary modification is safe and can improve quality of life

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Salicylates are a diverse family of 2-OH benzoic acid derivatives produced in all plants. The parent molecule, salicylic acid (SA), is a ubiquitous phytohormone responsible for pathogen resistance, regulation of growth, and a wide variety of other biological functions.[1,2] The medicinal use of salicylate-containing plant extracts was first recorded about 3500 years ago, and was widespread until the mid 19th century, when SA was isolated from willow bark, and acetylsalicylic acid (ASA) was subsequently synthesised and marketed by Bayer as *aspirin* in 1899.[2]

The occurrence of urticaria and angioedema from SA was recognised by the 1890s, and the first reports of urticaria, angioedema and asthma induced by ASA began to appear in the early years of the 20th century. Although by then salicylates were known to be present in certain foods, it took over 50 years before low salicylate therapeutic diets were developed. Feingold, an allergist at Kaiser Permanente in the 1960s, was the first to attempt exclusion of natural salicylates in patients with aspirin sensitivity. His claims of efficacy of the "K-P" diet in children with attention deficit hyperactivity disorder aroused enormous controversy at the time but were eventually substantiated by randomised trials.[3,4]

In the 1970s, a flurry of reports on the use of similar elimination diets in patients with chronic urticaria led one of us (ARS) to undertake a comprehensive analysis of the salicylate content of more than 330 common foods.[5] This analysis enabled more accurate diagnosis and management of patients with salicylate intolerance.[6,7] Since intolerance to food chemicals is highly idiosyncratic, with protean clinical manifestations in children and adults (including eczema with urticarial features), the only reliable means of identifying the provoking substances is by elimination of all potential triggers for 2–6 weeks, followed by systematic challenges if there is significant improvement.[7] An individually tailored diet can then be prescribed, after which patients are encouraged to gradually liberalise their intake to determine their tolerance threshold for each substance.

In this issue, Gray and colleagues report a retrospective chart review of 74 children seen over a 9-year period who at some point in their lives had been on a low salicylate diet, and call into question the safety, efficacy and evidence base for such dietary modifications.[8] We believe that these concerns are misplaced for several reasons. First, the results from peer-reviewed publication of group data may not be transferrable to determine what dietary modifications are appropriate in individual cases; the diagnostic elimination–challenge process we use is essentially a single-patient (*n*-of-1) trial method which is generally considered to provide strong evidence in guiding clinical practice.[9]

Second, Gray and colleagues attempt to cast doubt on the analysis of salicylates in foods; however, a recent systematic review firmly established that they are present in biologically significant amounts.[10] Further, they draw an inappropriate distinction between "natural salicylates" and "aspirin". On analysis, most salicylate-containing foods contain both ASA and SA, and more than one-third contain ASA alone.[11] Since there is extensive cross-reactivity between SA, ASA, benzoic acid and 4-OH benzoate in patients with chronic urticaria, ASA challenge reactivity is best regarded as a marker for intolerance to a range of natural salicylates and related dietary phenolics.[11]

Finally, Gray and colleagues list what they refer to as "adverse events" in 31 children, implying that these events might be a result of past exclusion of dietary salicylates. However, they do not demonstrate a causal relationship between these events and salicylate exclusion.

The possibility of nutritional deficiency is an issue of concern in any child on a modified diet. However, Gray and colleagues do not provide information about how "specific nutrient deficiencies" were evaluated in the cases they reviewed. Since estimation of nutrient intake from diet recall is notoriously unreliable, whenever such concerns arise, formal analysis of a 4-day food diary is warranted, followed by intervention where appropriate.

In our experience, intake of nutrients by children on a low chemical diet is usually at or above the recommended daily amount and is not significantly different from that of children on a normal diet (own unpublished data), confirming previously published studies of the nutritional adequacy of the Feingold diet.[12,13] We believe that with suitable guidance, dietary modification based on *n*-of-1 testing is safe in children and can lead to significant improvements in quality of life.

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