OPCs for Allergy Symptom Relief

The allergic response is a highly complicated and multifaceted dysfunction of the immune system. Designed to protect against dangerous invaders such as pathogenic organisms, the results of the allergic response, when mobilized against harmless foreign (or even autogenous) substances, can be disastrous. Immune function is the most recondite system of integrated functions of which we have any understanding, exceeding all but the brain in complexity. Among the more important single mechanisms of allergic reactivity is the pathway that leads to the release of histamine. IgE antibody programmed to interact with specific antigens is produced by lymphoid tissue and binds to IgE receptors (FCεRI and FCεRII) on several cell types, notably mast cells. FCεRI is the major receptor, while FCεRII is a minor one. When these cell-bound antibodies encounter their programmed allergen, they set off a chain reaction inside the cell that stimulates production of quantities of inflammatory chemicals — interleukins, leukotrienes, and histamine. These chemicals then bring about the many manifestations of the allergic/inflammatory reaction. The acute effects are tissue swelling and mucus membrane weeping from leaky capillaries, increased blood flow from dilated blood vessels, pain from noxious stimulation of afferent nerves, bronchial smooth muscle spasm, and, in severe cases, falling blood pressure and respiratory compromise. Chronic effects include damaging tissue remodeling — brosis, hyperplasia, and polypl formation — also from the effects of the same chemicals. A number of therapeutic interventions attempt to modulate these reaction pathways. Foremost among them are antihistamines, since histamine is so central to the entire process, but many other chemicals also are used. Corticosteroids, sympathomimetics, leukotriene antagonists, antibodies to IgE, and other inflammatory cytokines are the pharmaceutical foundation of allergy treatment, even though they all have significant side effects.

OPCs

On the other hand, certain chemicals naturally present in foods appear to exert notable benefits in allergic disease with minimal side effects. Oligomeric proanthocyanidins (OPCs) are found in extracts from unripe apples, grape seeds, pine bark, peanut skins, lemon peels (originally called "citrin"), green tea, Ginkgo biloba, and many other plants. In fact, when the original discoverer of OPCs, Dr. Jack Masquelier, attempted to prove OPC was a vitamin (vitamin P) by producing a deficiency state, he failed, presumably because he couldn't engineer a diet deficient in the substances. The "P," by the way, was chosen because the original chemical extract decreased vascular permeability to normal, preventing edema in scorbutic sailors and a pregnant friend.

The terminology designating these constituents has not yet reached unanimity, perhaps because they are multiple, interrelated, not yet fully identified, and active primarily in combination with other natural chemicals, reflecting an essential dilemma of natural product therapeutics. OPC is perhaps the most complete chemical description. OPCs are also referred to in the literature as, or along with, oligo proanthocyanidins, procyanidins, bisflavanols, polyphenols, condensed tannin, flavonoids, catechins, epicatechins, and epigallocatechins. The essence of these molecules is that, although they begin as monomers, they are active only as polymers. In fact, catechins are metabolically active only when chemically bound to OPCs. Another confusing aspect, shared with many natural therapeutics, is that they perform a variety of functions, so that each researcher, upon finding a function and isolating the agent, extracts a different compound and/or gives it a different name.

OPCs are powerful antioxidants, several times more potent than vitamins C and E. They are readily absorbed from the GI tract and have an affinity for proteins and particularly glycosaminoglycan-rich tissues, where they are most effective. Thus, they have a natural predisposition to end up at their target. In addition to scurvy and edema, they and their fellow traveling molecules have shown benefits in leukemia, cognition, circulation (both peripherally and in the central nervous system), mood, memory, vision, and premenstrual syndrome. The function concerning us here, however, is OPCs' effect upon mast cell degranulation, the process whereby histamine is released into the circulation during an allergic reaction.

Antihistamine effects

The effect of OPCs on histamine release can be simply stated: These polymeric chemicals interfere with the binding of the IgE antibody to their major receptor (FCεRI) on mast cells. Degranulation is prevented, and histamine release is dramatically reduced in a dose-dependent manner. Whether this effect is due to antibody inactivation in solution, receptor binding, enzyme inactivation, or some other mechanism has yet to be elucidated. Furthermore, since these studies were conducted on several unrefined plant extracts, their exact components are not yet characterized. OPCs also slow the production of histamine by blocking the attachment of histidine decarboxylase to collagen microfibrils. Histidine decarboxylase is an enzyme required to convert histidine to histamine.  

What is known to date is derived from anecdotal experience and in vitro experiments. Clinical studies to further elucidate the actions of OPCs are warranted.
Available preparations
As with many nutraceuticals, refining and quantitating products, as well as the determination of effectiveness, leave something to be desired. Plants produce different molecules in different amounts at different seasons, during different growth stages, as a result of differing harvesting and preparation practices and differing environmental factors. Within species, differences also affect their chemical production. Further, fellow traveling chemicals can have a definitive influence on effectiveness.
OPCs have a disadvantage in that they are found mainly in the parts of foods that are removed and discarded before serving, suggesting that adequate amounts are difficult to acquire from food sources alone. However, they also have an advantage in that careful and extensive research has been done by their discoverer, Dr. Jacques Masquelier, who has prolonged the work he began in 1940 to produce a tested and marketable product — Masquelier’s OPC®, found in high-quality nutritional supplement formulations. Two formulations of OPC are registered in France for vascular protection. Dr. Masquelier has recommended 50 mg per day of his particular preparation as the appropriate dose, although doses of 200 mg a day are used for maintenance and 500 mg for acute episodes.

Conclusion
Among the multiple and complex mechanisms involved in allergic reactions, mast cell histamine release is central to many of the symptomatic results. OPCs specifically inhibit this event in addition to offering several other beneficial effects that regulate immune/allergic pathways.

References

Yogic Nutrition

By Dr. Gina L. Nick

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