TRANSPORT OF NUTRIENTS AND DEFENSIVE COMPOUNDS IN THE PHLOEM

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Several classes of defensive, secondary compounds are found in the phloem and may be transported along with carbohydrates and other nutrients. These defensive compounds can potentially protect the phloem against aphids and other phloem feeders, as well as sink tissues. However, distinguishing between molecules that are authentically mobile and those that are localized in adjacent cell types is a challenge due to the complex nature of the phloem, as well as the strong propensity of sieve elements to violently displace their contents when severed. Several methods of phloem sampling will be discussed, including phloem bleeding, EDTA-facilitated exudation, and the use of severed aphid stylets. These methods will be discussed in the context of carbohydrate and iridoid glycoside translocation.