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Phenolic Compounds Produced by Secretory Structures in Plants: a Brief Review

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Abstract - The purpose of this brief review has been to provide more recent data regarding the production of phenolic compounds by secretory structures. Although morphology and histochemistry of glands are well documented, meagre information concerning phenolics is available in the surveyed literature. Two major groups of glands are found regarding phenolic compounds synthesis: 1. secretory cells producing mainly phenolics, 2. secretory cells producing phenolics coupled with other compounds. In the former group, phenolic compounds remain in mature organs, and prevail in the material produced by epidermis, hypodermis, idioblasts, and sheath encircling vascular bundles and ducts. The latter group is constituted of trichomes, cavities, ducts, laticifers, colleters, nuptial nectaries, osmophores and stigma system, which synthesize complex mixtures of terpenes, phenolic compounds, polysaccharides and other compounds. In vegetative organs, the secretion of these glands might provide chemical defence against damage by UV radiation, against pathogen activities, and play a role in the herbivory deterrence. Additional functions ascribed to phenolics produced by floral glands are associated with pollination, pollen germination and pollen-tube elongation.