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Effects of Day Length and Air and Soil Temperatures on Sesamin and Sesamolins Contents of Sesame Seed

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Abstract: The lignans, e.g., sesamin and sesamolins, are components of the functional food sesame (*Sesamum indicum* L.) seed. This study aims to clarify the effects of environmental factors during ripening on the concentrations of these lignans to produce lignan-rich seeds. Here, we examined the effects of 4 factors (seeding time, day length, air and soil temperatures). The concentrations of sesamin and sesamolins in the seed from the capsule at different nodes on the stem were monitored using the high performance liquid chromatography (HPLC). A low air-temperature (22/15°C) during ripening increased the concentrations in the seed at the full-ripe stage of individual capsules compared with a high air-temperature (30/23°C). A short day-length (10-hr) and high soil-temperature did not affect the concentrations. The concentrations showed a tendency to increase with delay of seeding time. Under natural air-temperature conditions, the concentrations in the seeds from the capsules at a higher position on the stem were higher than those at a lower position, mainly due to the air temperature during ripening. The contents per seed were affected by the environmental factors through the difference in seed weight. The concentrations increased with the increase in seed dry weight and decreased with the desiccation of seeds during maturity. Under a low air-temperature condition, the rate of decrease in sesamin concentration was low, the accumulation period was longer and the maximum concentration of sesamolins was higher, resulting in higher contents of these lignans.

Keywords: [Day length](#), [Lignan](#), [Seed weight](#), [Sesame](#), [Sesamin](#), [Sesamolins](#), [Temperature](#)

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