

Light quality can be used to regulate shoot formation from cotyledon explants of lettuce (*Lactuca sativa*)

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The effect of light quality (white, red and blue light) on organogenesis from lettuce (*Lactuca sativa*) cotyledon explants was investigated. Lettuce seeds were sterilised and germinated under continuous white light (PAR: $50 \mu\text{mol m}^{-2} \text{s}^{-1}$). Cotyledons were excised, from 3, 4, 5, 7, 10, 14 and 21 day old plants, halved and placed on a shoot inducing medium (SIM) comprising Murashige and Skoog salts and vitamins, 30g L^{-1} sucrose, 8g L^{-1} agar, $0.44 \mu\text{M}$ Benzylaminopurine, and $0.54 \mu\text{M}$ Naphthalene Acetic Acid. The explants were cultured under continuous white, red or blue light (PAR: $50 \mu\text{mol m}^{-2} \text{s}^{-1}$) for 28 days and the number of shoots formed on each explant counted. Explants taken from donor plants younger than 5 days old consistently produced more shoots if exposed to red light, than white light. As the age of the donor plant increased, explants exposed to red light produced fewer shoots than those exposed to white light. Blue light strongly inhibited shoot production regardless of the donor plant age. In a second experiment cotyledons were excised from 5 day old seedlings, placed on SIM, and grown under red, white or blue light for 1, 3, 7, 14 or 21 days before being transferred to another light regime. Blue light was only an effective inhibitor of shoot production if explants were exposed for 7 days prior to transfer to white or red light. Explants exposed to red or white light for 7 days, prior to exposure to blue light, produced normal shoot numbers. The first 7 days of culture are crucial for the production of shoot primordia and subsequent shoot development. Blue light inhibits critical processes that occur during this time period and irreparably damages the potential for shoot production.

Stereocaulon ramulosum.

A common lichen of disturbed areas such as roadside banks, slips and old watercourses

