Study on Eco-physiological Adaptation of Desiccation in *Dolichomitriopsis diversiformis*

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CONTENT

- Moisture Content Response
- Photosynthetic Factors
- ROS Metabolism and Lipid Peroxidation
- Protective Substance

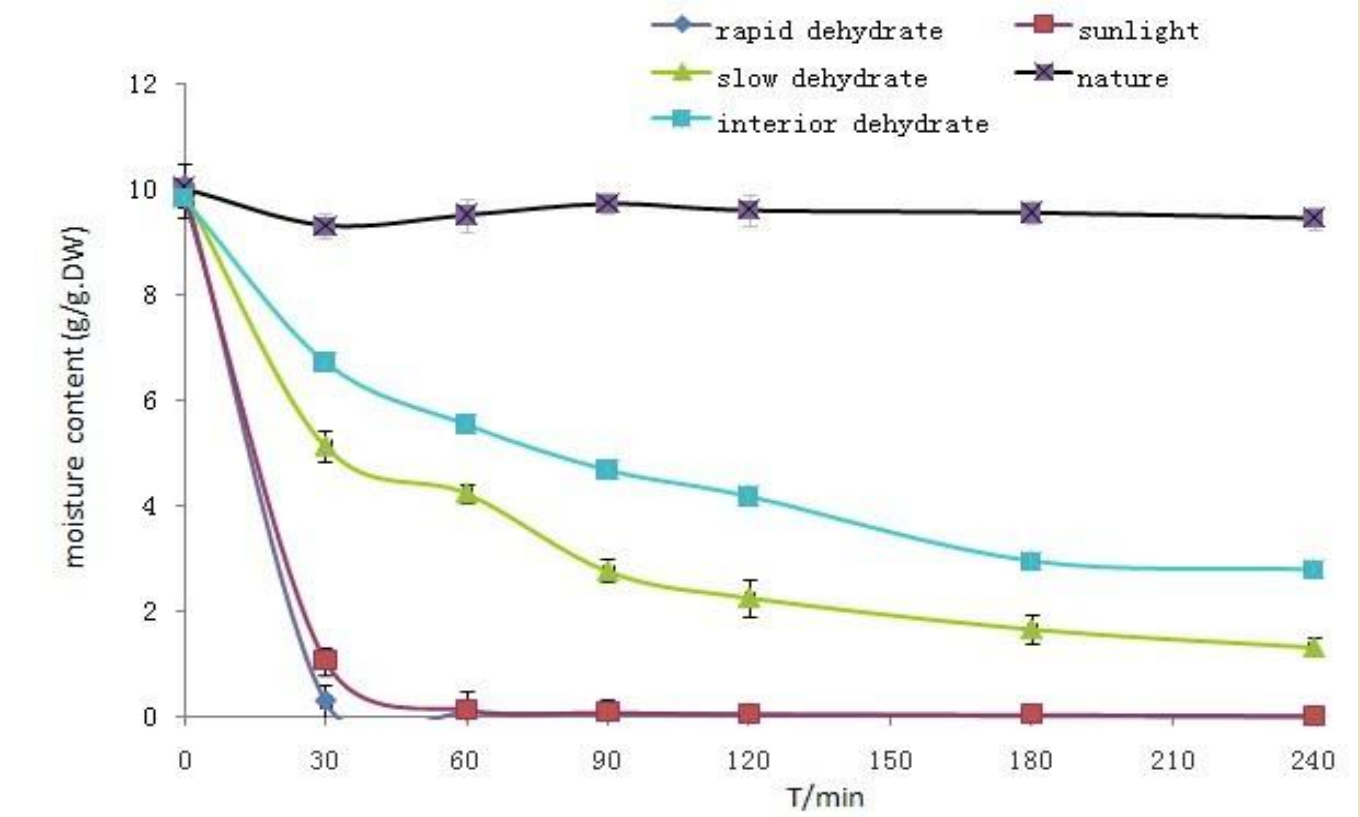
- Moisture Content

(1) Several Concepts

Resurrection plant & *Dolichomitriopsis diversiformis*

- Moisture Content

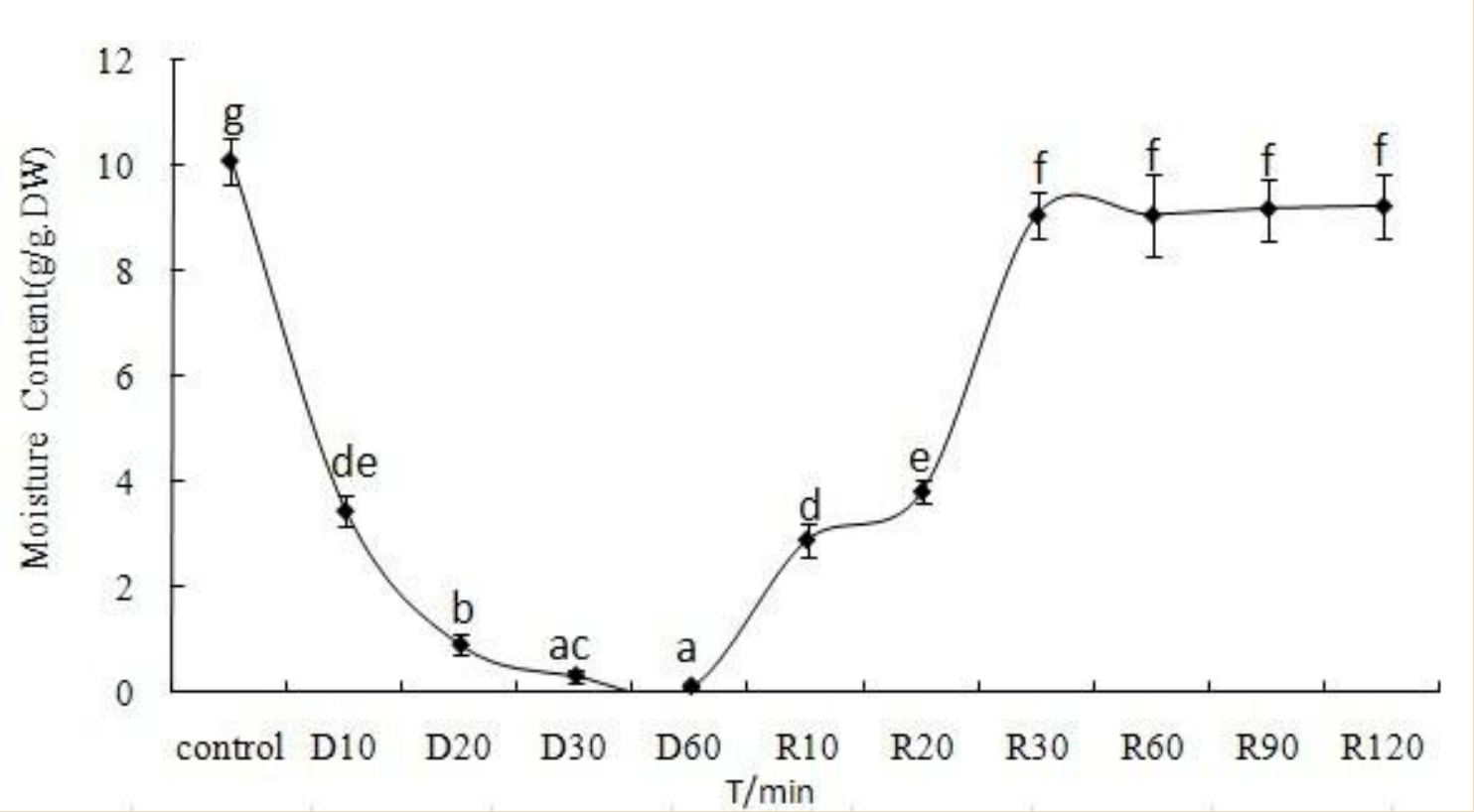
(2) MC response on desiccation



Impact of different desiccation methods on moisture content in *Dolichomitriopsis diversiformis* during dehydration

- Moisture Content

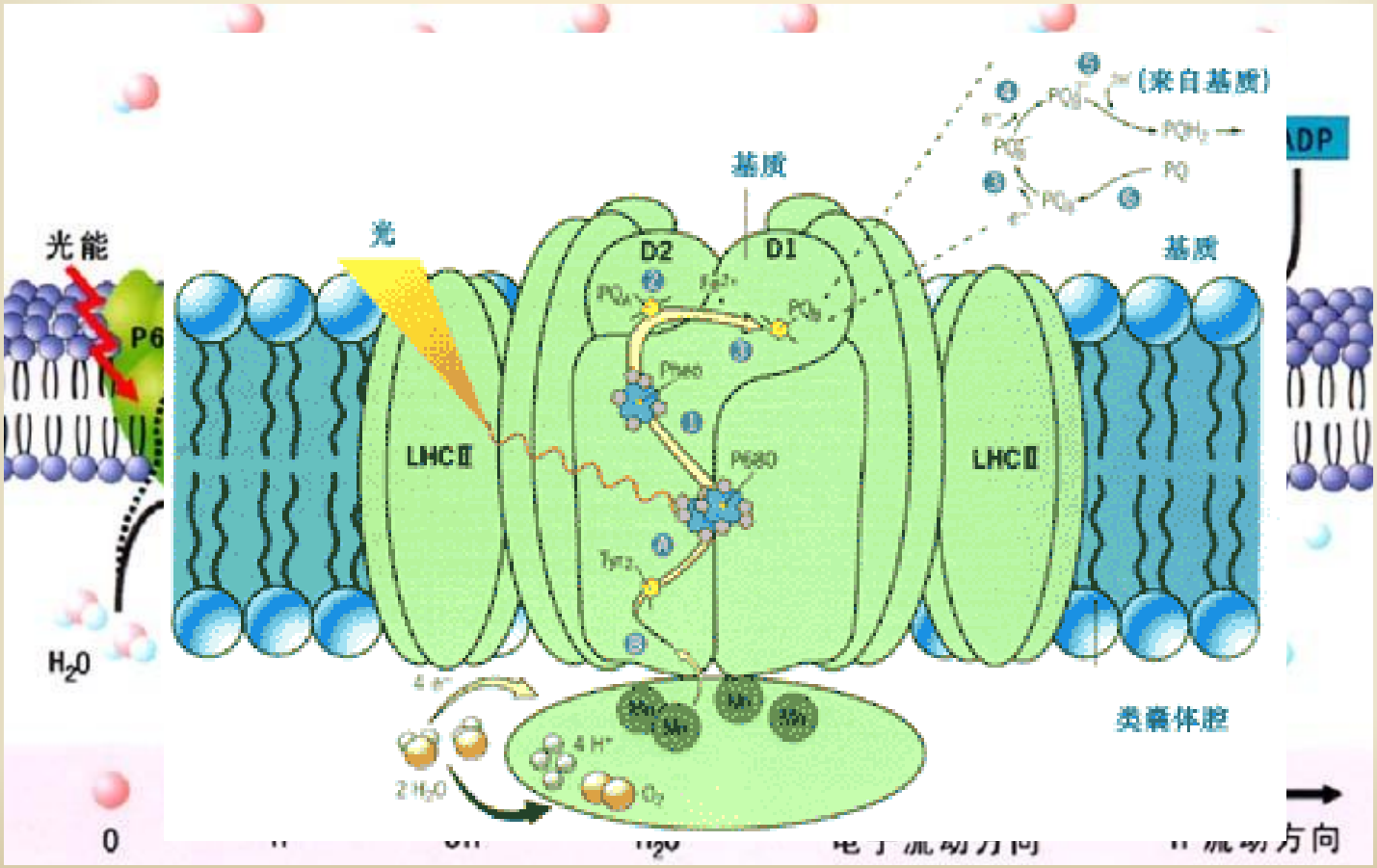
(3) MC variation during dehydration and rehydration



Change of moisture content of *Dolichomitriopsis diversiformis* during dehydration and rehydration

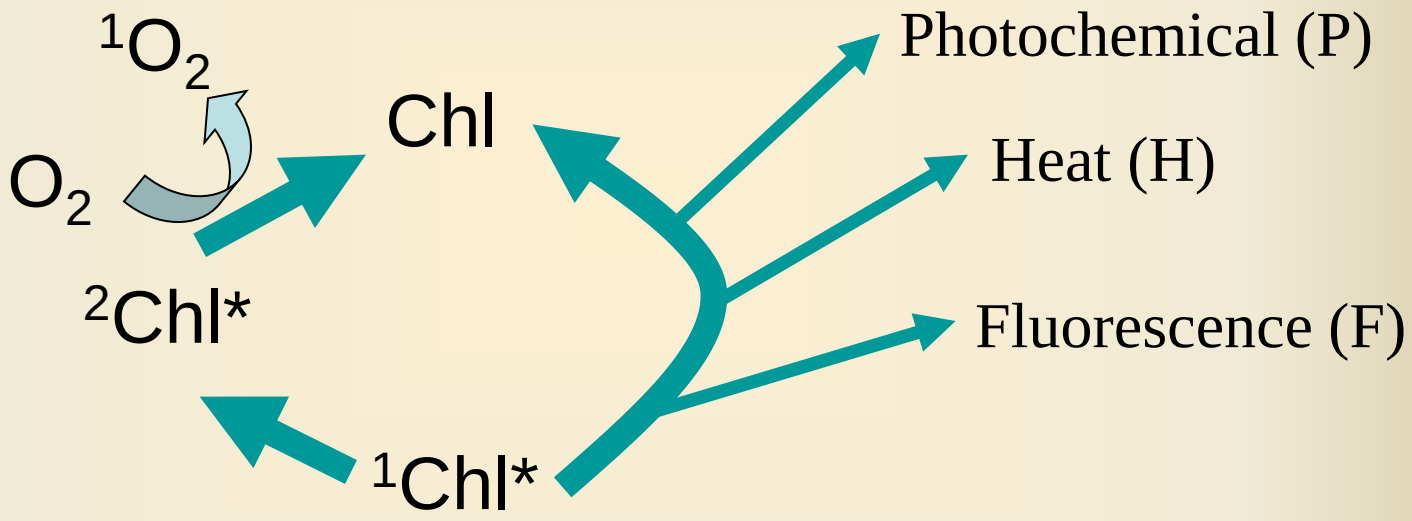
- Photosynthetic Factors

(1) PSII Photosynthetic electron transportation



- Photosynthetic Factors

(2) Chlorophyll Fluorescence Parameters (CFP)



P + H + F = 1 **F = 1- P - H**

qP

NPQ (related to)

Fv/Fm

Fv/Fm =(Fm-Fo)/Fm : PS II的最大量子效率，反映植物潜在最大光合能力

高等植物一般在0.8－0.84之间

当植物受到胁迫（Stress）时，Fv/Fm显著下降!

Φ_{PSII}

$\Phi_{PS\,II}$ = Yield = (Fm’-Fs)/Fm’ = ΔF/Fm’ = qP·Fv’/Fm’ :

任一光照状态下PS II的实际量子产量（实际光合能力、实际光合效率）

不需暗适应，不需测定Fo’，适合野外调查

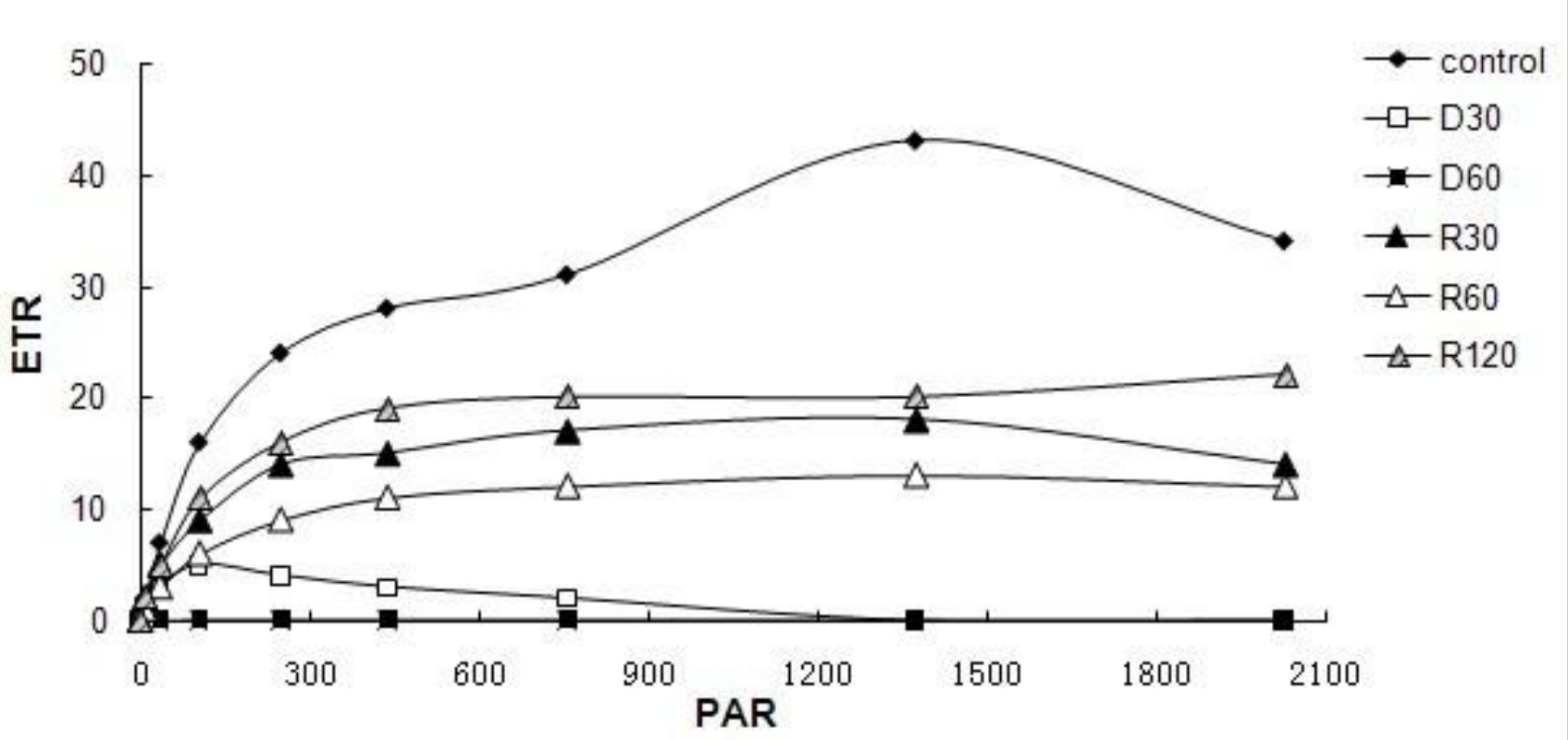
ETR

rETR =PAR·ΔF/Fm’·0.84·0.5 : 相对电子传递速率

rETR随PAR的变化图即为光响应曲线，即使光化光的持续时间短至10 s，也可得出典型的光响应曲线，这被称为快速光曲线（Rapid Light Curves）

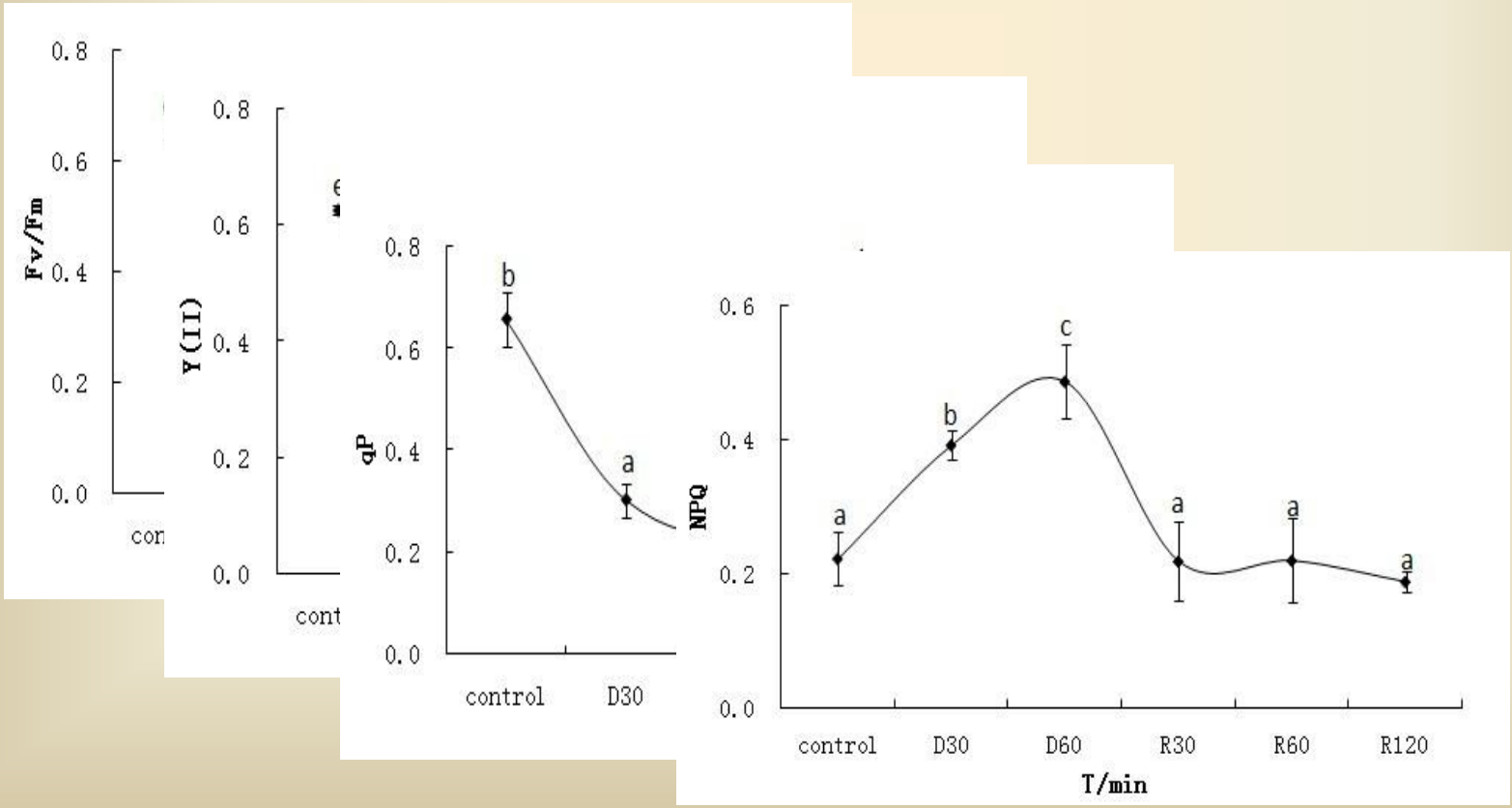
- Photosynthetic Factors

(3) Variation of CFP in *Dolichomitriopsis diversiformis* —ETR-PAR



- Photosynthetic Factors

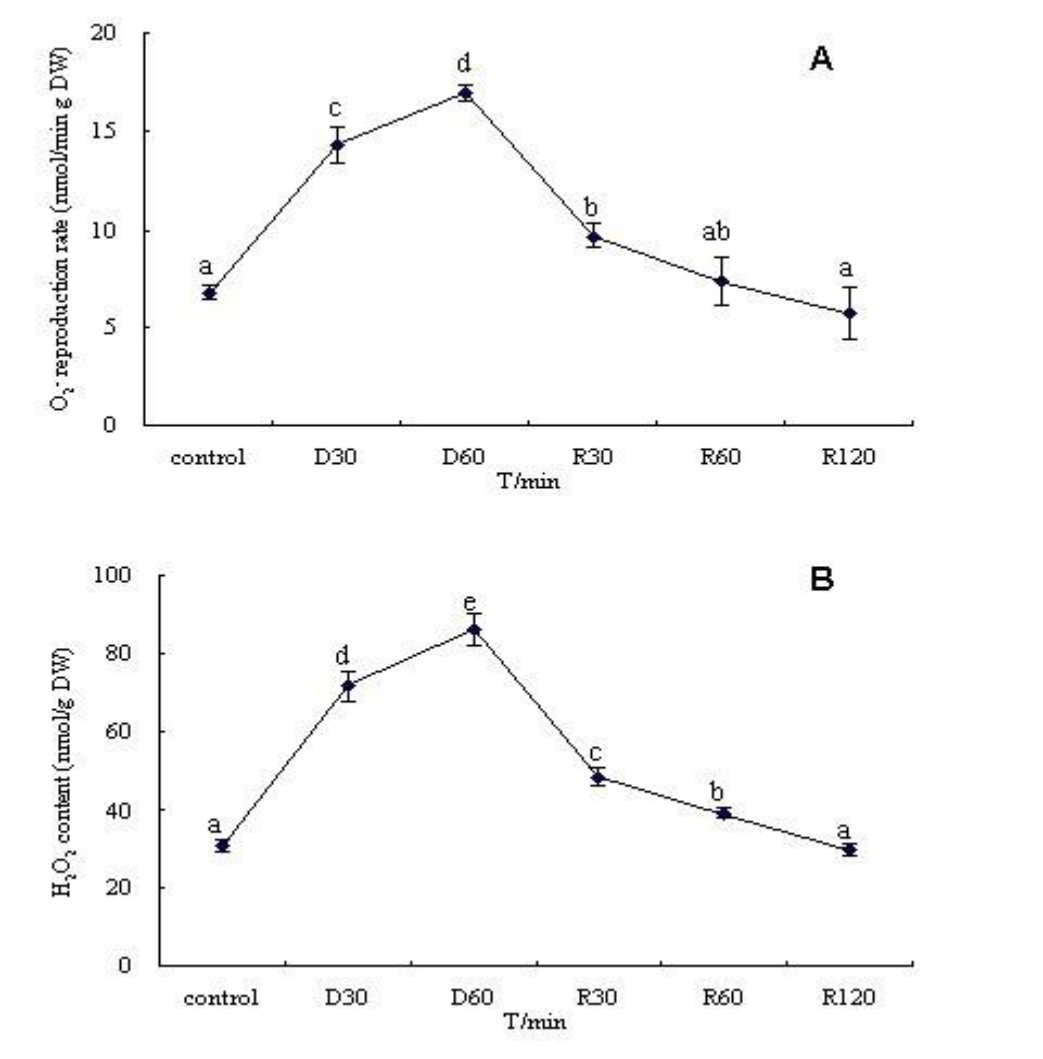
(3) Variation of CFP in *Dolichomitriopsis diversiformis*—Fv/Fm,Y(II) ,qP and NPQ



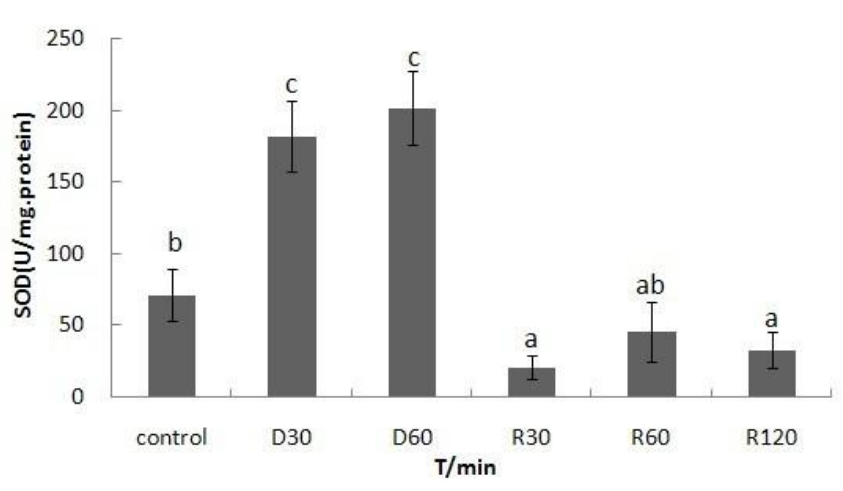
- ROS Metabolism and Lipid Peroxidation

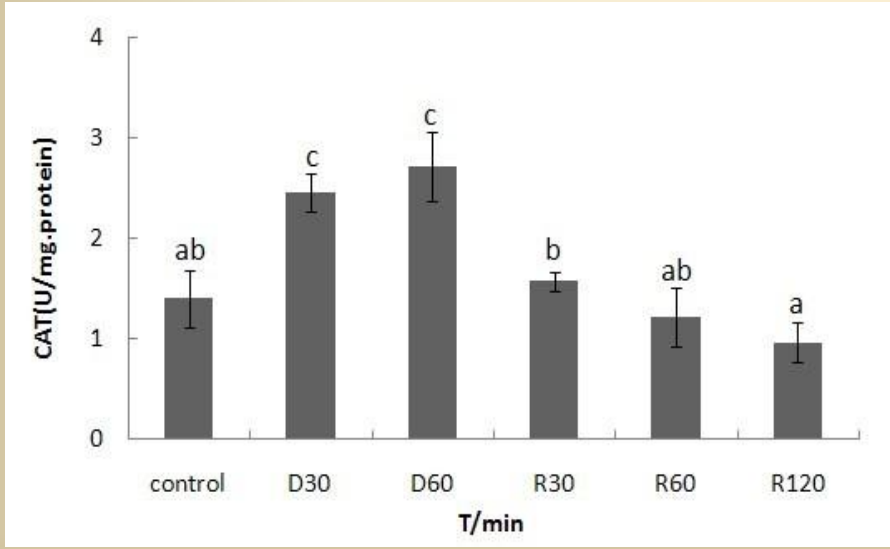
(1) ROS Metabolism

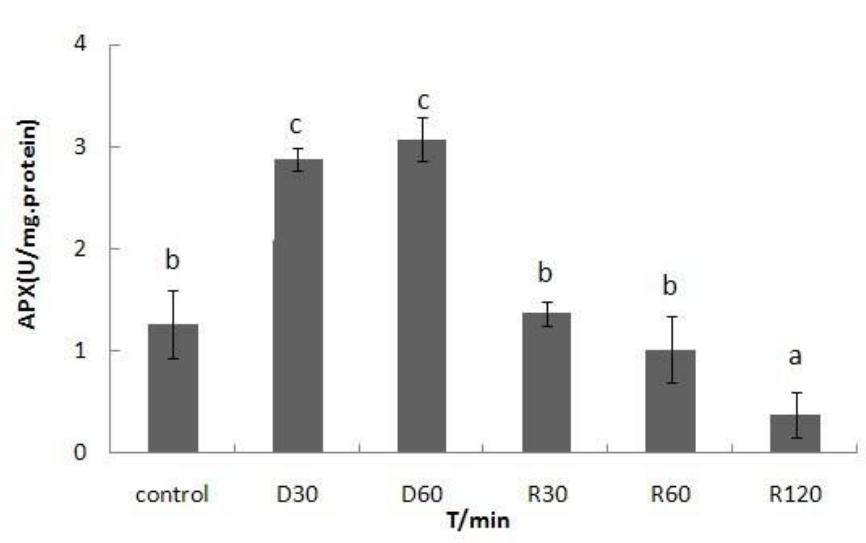
(1) ROS Alteration



- ROS Metabolism and Lipid Peroxidation
  (2) Anti-oxidative Enzymes

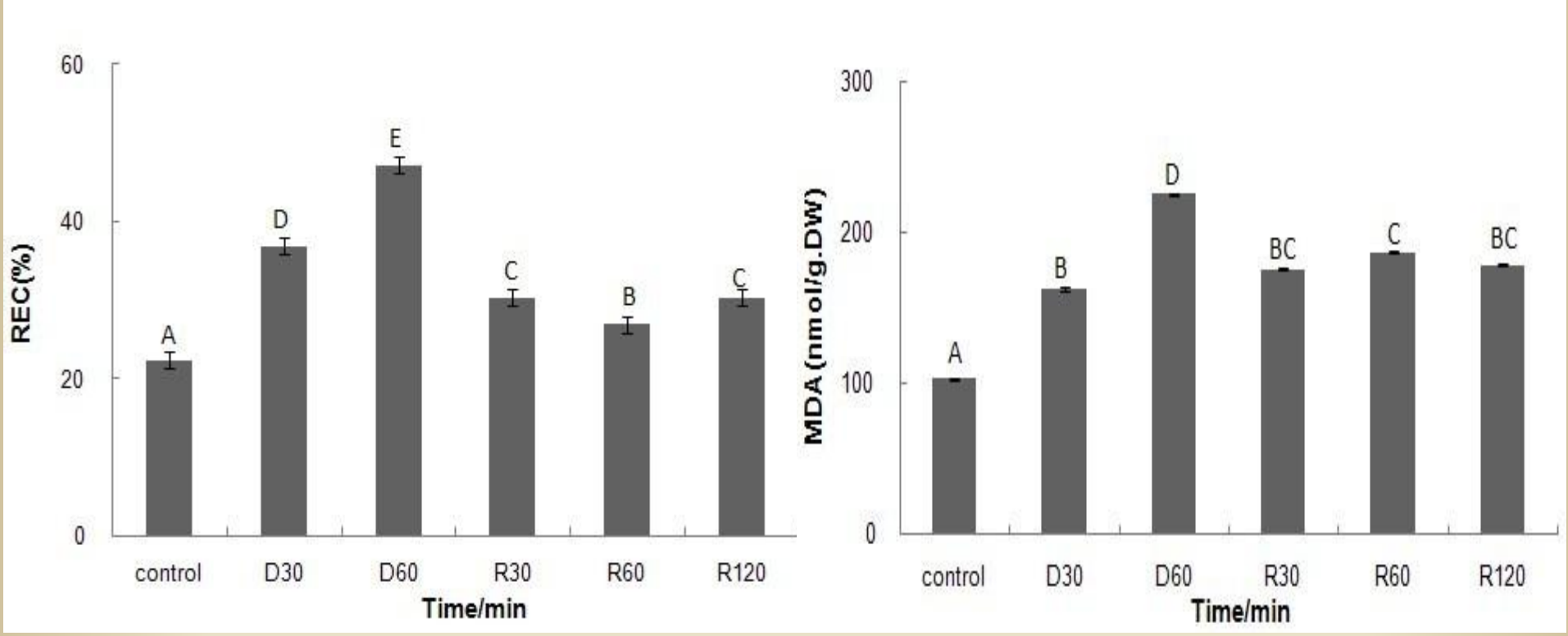






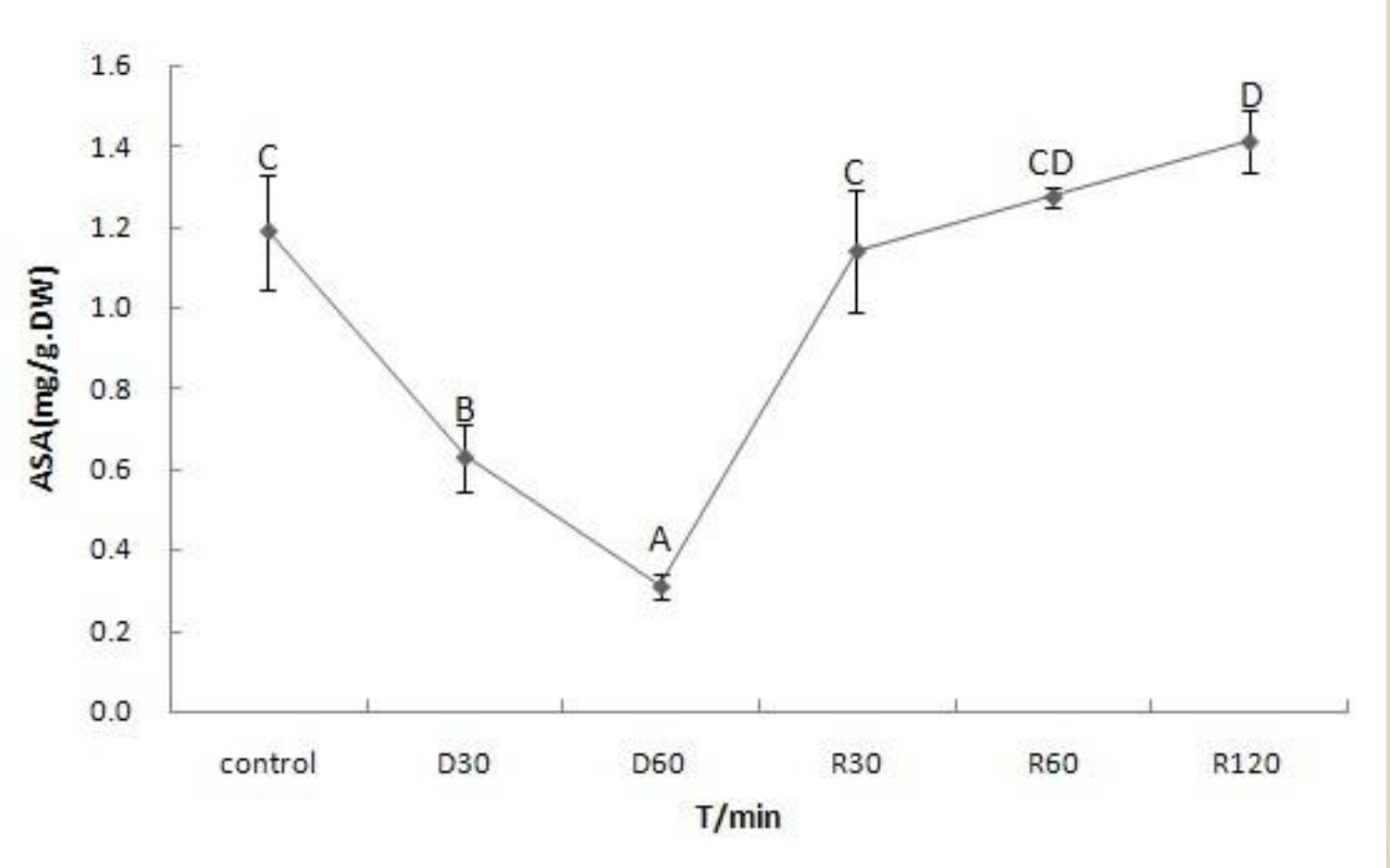
- ROS Metabolism and Lipid Peroxidation

(3) Lipid Peroxidation



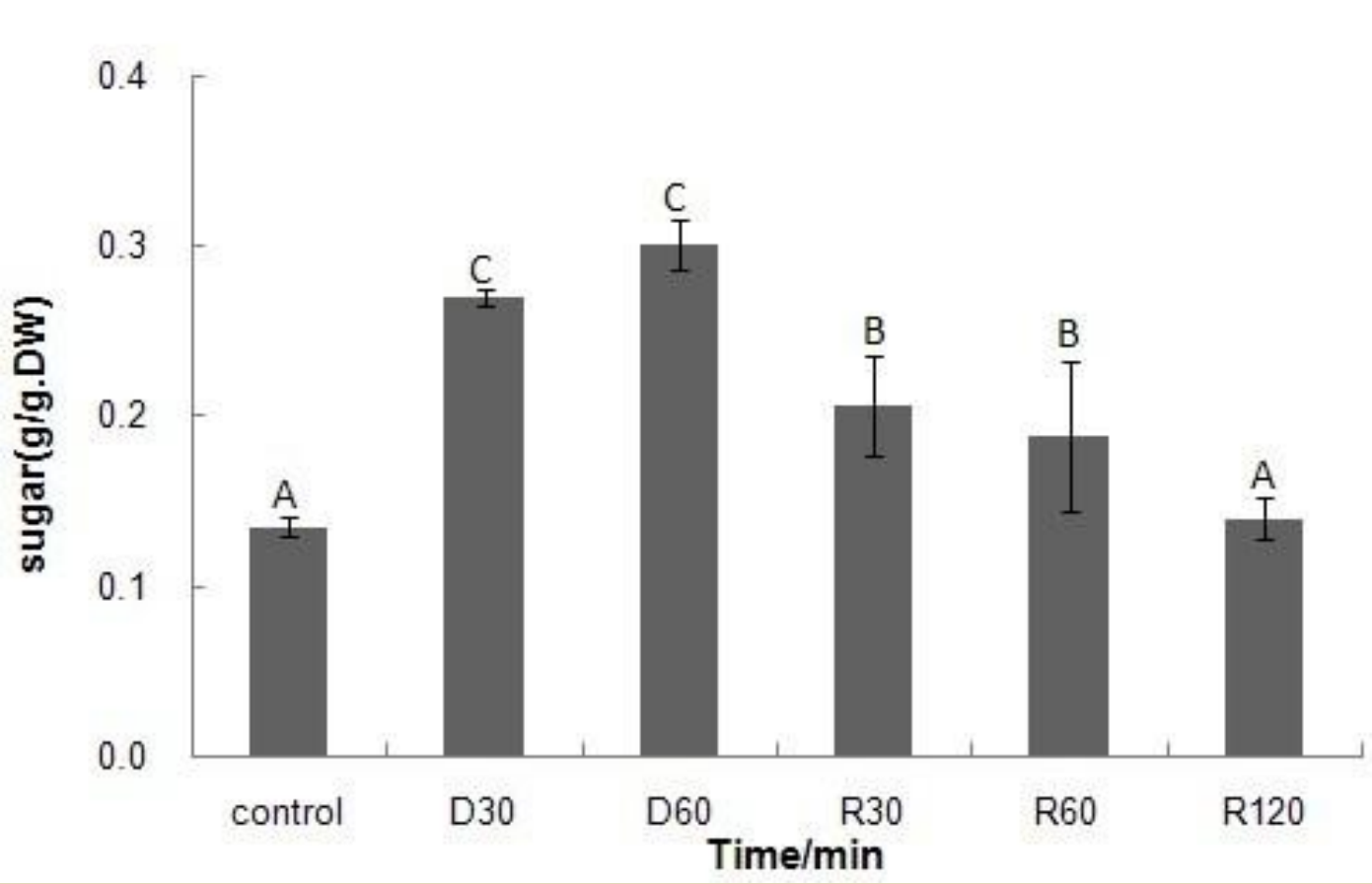
- Protective Substance

(1) AsA content



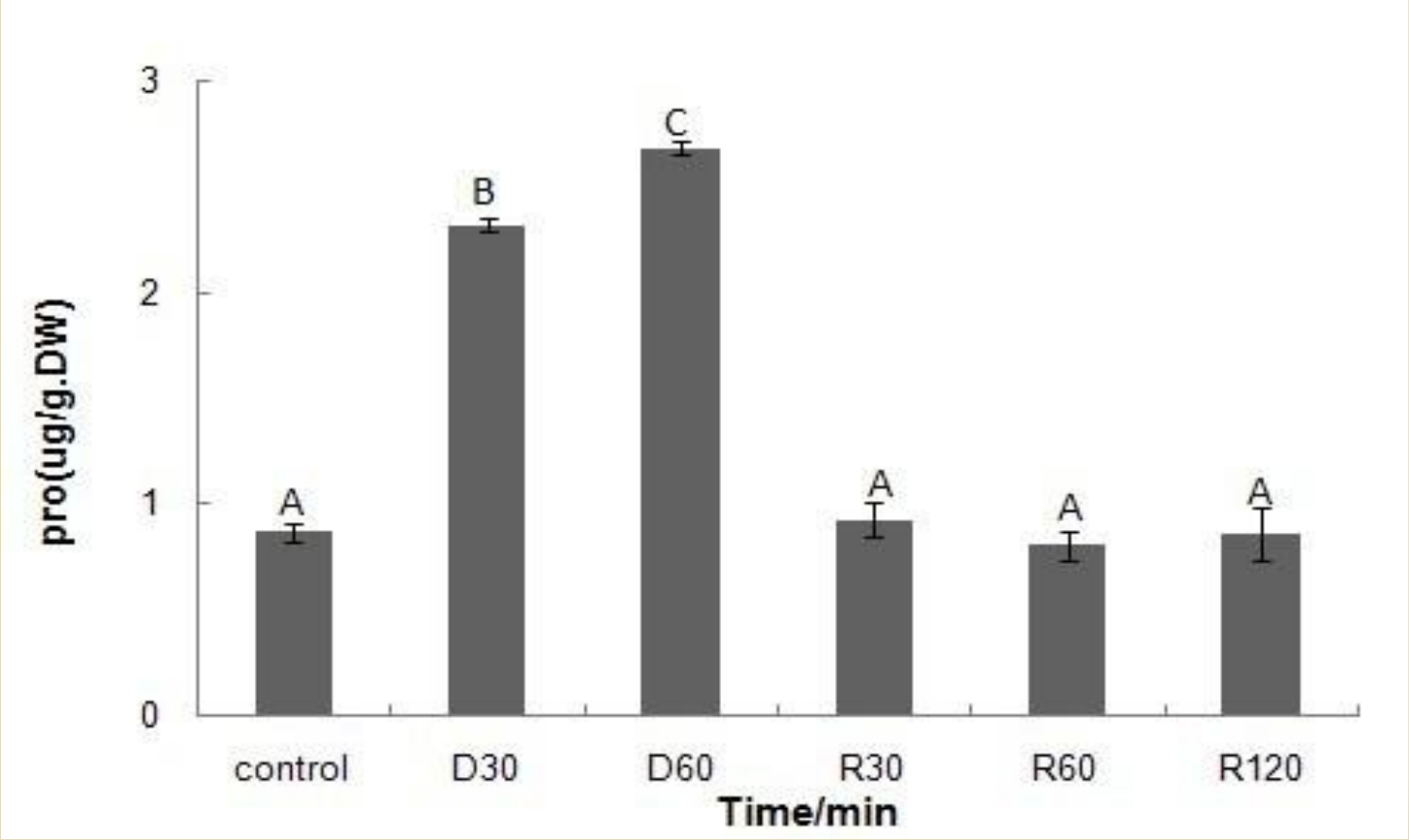
- Protective Substance

(2) Soluable Sugar



- Protective Substance

(3) The Special Amino Acid——Proline



CONCLUSION

- Moisture content variation was the basis of desiccation tolerance in *Dolichomitriopsis diversiformis*
- even endangered species, possess powerful tolerance on dehydration.
- PS Ⅱ of *D. diversiformis*, especially reaction central pigment (P680) is sensitive to dehydration and antioxidative enzymes play an disorder phenomenon in rehydration. The two factors is probably the eco-physiological restrictors of moisture of the bryophyta.

ACKNOWLEDGEMENT

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THE END

THANKS