

研究论文

三种红树植物对盐胁迫的生理适应

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摘要 无瓣海桑(*Sa*)、海桑(*Sc*)、红海榄(*Rs*)都属于乔木红树植物。这3种红树植物对盐度的敏感程度存在着差异, 因此对不同标准的盐度的适应性也大不相同。通过对这3种红树植物用不同的盐度的水3个月的处理, 发现*Sa*和*Sc*叶片的净光合作用速率、气孔导度、蒸腾速率都随着盐度的增加而降低。*Sa*、*Sc*、*Rs*叶片中的可溶性总糖含量随着盐度的升高整体上有上升趋势。*Sa*和*Sc*茎、叶中丙二醛(MDA)含量在低盐度时(<10)略有降低, 随着盐度升高, MDA含量急速升高, 而*Rs*茎、叶中MDA只是在盐度超过40时才会有明显增长, 3种红树植物根部的MDA含量变化都不明显。*Rs*可以依靠超氧化物歧化酶(SOD)来消除活性氧自由基, 而红树植物*Sa*和*Sc*的耐盐性稍差, SOD对膜的保护能力不强。根据实验结果, 可以得出对3种红树植物对盐度的适应范围, 这将为指导中国南海海岸线上的红树造林计划提供依据。

关键词 [无瓣海桑](#) [海桑](#) [红海榄](#) [盐胁迫](#) [净光合作用速率](#) [气孔导度](#) [蒸腾速率](#) [可溶性糖](#) [膜脂质过氧化](#) [SOD](#)

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Research on physiological adaptability of three mangrove species to salt stress

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Abstract The impact of salinity on three arboreal mangrove plants, *Sonneratia apetala*(*Sa*), *S. caseolaris*(*Sc*), *Rhizophora stylosa*(*Rs*) was studied. The three mangrove species were treated with different salinity levels over a 3 months period. The response and adaptation of these three mangrove species to salinity were shown to be different. Net photosynthesis rate, stomata conductance and transpiration rate of leaves decreased and soluble sugar content of leaves increased with salt concentration in all three mangrove species. The MDA content in stems and leaves of *Sa* and *Sc* was somewhat decreased when the salinity was lower than <10, but rapidly increased with increased salt concentration. The MDA content in stems and leaves of *Rs* increased only when salinity was greater than 40. Changes of MDA content in roots of the three mangrove species were not observed. The adaptabilities of *Sa* and *Sc* to salt tolerance were limited. The more salt tolerant mangrove *Rs* likely eliminated the free oxygen radicals through the increase in activity of superoxide dismutase (SOD). Results of this experiment identified salinity levels best suited for growth and metabolism of the species providing information needed for maintaining mangrove forestation along the South China coast.

Key words [Sonneratia apetala](#) [S. caseolaris](#) [Rhizophora stylosa](#) [salt stress](#) [net photosynthesis rate](#) [stomata conductance](#) [transpiration rate](#) [soluble sugar](#) [membrane peroxidation](#) [SOD](#)

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