Ain Shams University
Faculty of Sciece
Botany Department

PHYSIOLOGICAL AND BIOCHEMICAL STUDIES ON *AVICENNIA MARINA* (FORSK.) VIERH GROWN IN EGYPT

Thesis
Submitted for the Partial Fulfillment of the Degree of
Master of Science in Botany

By

Nabeha Samir Ibraheem Mohamad
B.Sc. in Science (Botany-Chemistry)
(٢٠٠٠)

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This thesis has not been previously submitted for any degree at this or at any other university.

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ABSTRACT

Samples of *Avicennia marina* (Forsk.) Vierh were collected from a location at Safaga Mangrove Stand, ١٧ km south Safaga, Red Sea shore, Egypt at different seasons; i.e., summer, autumn, winter, and spring. Natural products were analyzed in leaves, lateral branches, bark and seeds for possible use in certain drug production. The season and the plant organ were detected, where highest amounts of respective plant constituents were attained. In this instance, polysaccharides comprised the major constituents of *Avicennia marina* organs and could be isolated into two fractions: PI including material of relatively high molecular weight and PII with lower molecular weight. In general, the PI yield in different plant organs at different seasons was higher than that of corresponding PII product. Mostly, the PI products were characterized by relatively higher fibrinolytic and anticoagulant activities than the corresponding PII products. Seven of the natural components in the PI fraction and three in the PII product exhibited fibrinolytic activities higher than that of the standard Hemoclar preparation. Sulfating the polysaccharide fractions of *Avicennia marina* was also found promising, with respect to enhancing their biological

i activity. Assessing possible growth regulating activities of the polysaccharide fractions of *Avicennia marina* plant organs at different seasons was carried out, using callus tissue initiated from *Helianthus annus* seedlings. The most interesting result was the rooting- inductive effect of the PI products originated from the autumn leaves and the winter bark.

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