

showed that about 6.1% of proteins are expressed differentially between male and female gametophytes. Full cDNA sequence of the proteins, however, was hardly obtained because of the handicap using degenerated primers based on the internal sequence of isolated proteins. In this study, differentially expression genes (DEGs) were investigated in *Aglaothamnion callophyllidicola* using annealing control primer (ACP)-based polymerase chain reaction (PCR) and real-time PCR. Sixty ACP-primers yielded total of 182 bands and 10 of them were sex specific; 6 male specific and 4 female specific. The sex specific bands were eluted and cloned to get partial sequence of each gene. Validity of the sex specific genes was examined using real time PCR. Most genes showed 2–5 times difference in quantity between male and female plants, which was difficult to verify using northern blot method. A male specific gene was isolated which was expressed fifty times more in male plants from semi-quantitative RT-PCR. Specific primers were designed for 5' and 3' RACE and a full cDNA of 1088 bp was obtained. Northern blot analysis confirmed that the cDNA was male specific. BLAST search of the cDNA yielded no significant match (<30%) to any known genes. Therefore, we named this noble gene as AMSG1 (*A. callophyllidicola* Male Sex-related Gene).

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PHYSIOLOGICAL ACTIVITIES OF THE COOKING DRIPS OF *HIZIKIA FUSIFORMIS*

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Hizikia fusiformis has various biological activities due to its antioxidant, anticoagulant, antihypertensive and immunomodulating effects. Because it is the dried form of *H. fusiformis* which is mainly sold in the market, a large amount of cooking drips are obtained as byproducts during the drying process. To utilize these cooking drips produced, the physiological activities of the cooking drips of *Hizikia fusiformis* cooking drips (CDH) were investigated. To evaluate the free radical scavenging activity, 1,1-diphenyl-2-picrylhydrazyl radical scavenging and β -carotene bleaching activities of the CDH extracts were estimated. Using the Folin-Ciocalteu method, the content of polyphenolic compounds in CDH was colorimetrically measured. It was also shown that the cooking drips had high inhibitory activities on the tyrosinase and Angiotensin-I Converting Enzyme. These results suggest that wasted cooking drips can be used as a functional component by the food and cosmetic industries.

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ALGAE OF THE FAMILY GRACILARIACEAE (GRACILARIALES, RHODOPHYTA) FROM THE RUSSIAN PACIFIC COASTS

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Algae of the family Gracilariaceae represent economically important seaweed resources of the Russian Pacific though they are few in number. Only two species of *Gracilaria* were for certain recorded from this area: *G. textorii* with flattened frond and the alga with terete frond known for a long time as *G. verrucosa*. Lately it was treated in Russian literature as *G. gracilis*, however it raised our doubts. Up to now taxonomy of these algae was understudied, so our purpose was to clarify it. Our study revealed that "*G. gracilis*" represented two different species. One was described as a new species *Gracilaria austramaritima* Przhemenetskaya in Selivanova et al., 2008. The other one had morphological similarity with *G. vermiculophylla* from the south-eastern Asia (Vietnam, China, Japan). Molecular data (*cox1*) confirmed that algae from the Russian Pacific coasts identified as *G. gracilis* in fact represented *G. vermiculophylla*. Comparison of *G. austramaritima* and *G. vermiculophylla* revealed their difference in gross morphology and life cycles. *Gracilaria austramaritima* has much in common with *G. rhodocaudata* from Japan but differs from the latter and other morphologically close species from the North Pacific by huge size and the absence of nutritive filaments in the gonimoblast. Molecular data showed close affinity of *G. austramaritima* with *Gracilaria* (= *Gracilariopsis*) *chorda*. Thus there are at least three species of *Gracilaria* in the Russian Pacific: *G. textorii*, *G. vermiculophylla* and *G. austramaritima*. Additional studies are necessary to clarify phylogenetic relationships of *G. austramaritima* and *Gracilariopsis chorda*.

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DIFFERENTIAL GENE EXPRESSION OF AN ANTARCTIC *CHLORELLA* IN RESPONSE TO VARIATIONS IN GROWTH TEMPERATURE

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