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Functional Materials Obtained from Seafood Processing By-Products

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Lots of various seafood processing by-products (SPBP) produced from seafood plants have been discarded without suitable application methods owing to their poor sensory qualities. However, SPBP could be converted into valuable products because those are known to have high contents of available compounds such as amino acids and peptides. Moreover it is expected that SPBP could be used as functional food materials if functional properties of those are revealed. The objective of this study is to evaluate functional properties of SPBP in order to establish basic research for the development of functional flavoring agents from SPBP. Functional property tests including antimicrobial activity, antioxidative activity, angiotensin-I converting enzyme (ACE) inhibitory activity and xanthine oxidase (XO) inhibitory activity were conducted in 7 kinds of SPBP, e.g., anchovy sauce residue (ASR), blue mussel cooker effluent (MCE), oyster cooker effluent (OCE), cockle shell cooker effluent (CCE), squid cooker effluent (SCE) and anchovy cooker effluents (ACE), and oyster shucking water (OSW). Antimicrobial activities against to *E. coli* were not appeared in all SPBP except for ASR. The antioxidative activities (EDA₅₀) of ASR (1.30 mg/mL) and SCE (1.33 mg/mL) were stronger than those of the others. High ACE inhibitory activity (IC₅₀) showed in ASR (13.04 µg/mL), MCE (20.00 µg/mL) and CCE (27.27 µg/mL), respectively. Besides these, all samples had ACE inhibitory activity in 100 µg/mL ~ 150.00 µg/mL ranges. In the results of XO inhibitory activity, all samples had lower inhibitory activity than 20% except for ASR (43.68%). In conclusively, 7 kinds of SPBP had effective functional properties including antioxidative activity, ACE inhibitory activity and XO inhibitory activity.

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Wogonin Protects Ethanol-induced Gastric Mucosal Damage in Rats

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Acute alcohol abuses trigger significant hemorrhage epithelial cell loss, edema, and angiogenic responses on the gastric mucus. Although certain flavonoids, including wogonin (5,7-dihydroxy-8-methoxyflavone), have been used traditionally as a component of remedy for gastric injury, the mechanisms of their protective effects on the gastric mucus have not been explored. The present study investigated the effects of wogonin on the acute ethanol induced-gastric injury in rats. Male Sprague Dawley rats (Samtaco, Seoul, Korea) were food-deprived for 24 hr but allowed to water ad libitum up until 1 hr prior to the study in a wire mesh bottomed individual cage. The rats were randomly divided into six groups of ten animals. Control group received 0.5% CMC only, intragastrically 1h before 0.5ml/kg oral administration of absolute alcohol. Wogonin concentrations were treated as 3, 10, and 30 mg/kg BW respectively, at 1 hr prior to the ethanol abuse. Wogonin effectively protected gastric lesion induced by ethanol dose dependently, assessed by gastric lesion index and histological activity. The cellular localization of HSP70 protein and COX-2 protein by immunohistochemical staining was significantly increased in inflammatory cells induced by ethanol and was attenuated by wogonin treatment. Mucosal level of PGE2 in gastric lesion was decreased. The treatment of wogonin increased PGE2 level significantly by dose dependent manner. These results indicated that HSP70 and COX2 proteins are highly localized in the base of gastric lesions induced by acute ethanol abuse and wogonin treatment lessened the gastric lesion. Further study is needed to investigate the mechanism of protective effect of wogonin in ethanol induced gastric damage.