

# Antihypertensive Tripeptides

## **Casein hydrolysate containing the antihypertensive tripeptides Val-Pro-Pro and Ile-Pro-Pro improves vascular endothelial function independent of blood pressure-lowering effects: contribution of the inhibitory action of angiotensin-converting enzyme.**

Accumulating evidence shows that deterioration of vascular endothelial function underlies the pathophysiology of cardiovascular diseases following lifestyle-related diseases. Both Val-Pro-Pro (VPP) and Ile-Pro-Pro (IPP), which are tripeptides derived from proteolytic hydrolysate of milk casein, inhibit angiotensin-converting enzyme (ACE), suggesting that both VPP and IPP may improve vascular endothelial function, because many ACE inhibitors are known to improve endothelial function. We investigated the effects of ACE-inhibitory food component in humans with mild hypertension, since there has been no report on such effects. The study was conducted by the placebo-controlled, double-blind cross-over method in 25 male subjects with mild hypertension. After casein hydrolysate containing both VPP and IPP were administered for 1 week, reactive hyperemia of the left upper forearm was measured using plethysmography as an index of vascular endothelial function. Since one subject dropped out, we analyzed the data of 24 subjects. The reactive hyperemia of the left upper forearm was produced by a 5 min occlusion using inflation of a cuff. The maximum blood flow during reactive hyperemia was 20.8 $\pm$ 6.7 mL/min/100 mL tissue in the placebo group, whereas it increased remarkably to 30.0 $\pm$ 10.4 mL/min/100 mL tissue in the group administered casein hydrolysate containing both VPP and IPP ( $p < 0.001$ ). There was no change in systemic blood pressure, indicating that the improvement of the vascular endothelial function attributable to VPP and IPP is independent of hemodynamic changes. We conclude that casein hydrolysate containing VPP and IPP improves the vascular endothelial dysfunction in subjects with mild hypertension. The continuous intake of VPP and IPP could help to prevent cardiovascular diseases in hypertensive subjects.

Hirota et. al., Hypertens Res. 2007 Jun;30(6):489-96

Catalog Number	Name	Standard Size
002-08	IPP (Ile-Pro-Pro)	5 mg
002-07	VPP (Val-Pro-Pro)	5 mg



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