

Calcium Sensitizers Isolated from the Edible Pine Mushroom, *Tricholoma matsutake* (S. Ito & Imai) Sing.

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Three lactam compounds were isolated from the fruiting body of *Tricholoma matsutake* (S. Ito & Imai) Sing., an edible mushroom, and their structures were identified as *cyclo-S-proline-R-leucine* (**1**), hexahydro-2*H*-azepin-2-one (**2**), and butyl 5-oxo-2-pyrrolidine carboxylate (**3**) by chemical, physicochemical, and spectral evidence. In *in vitro* screening tests, compounds **1** and **2** acted as calcium sensitizers in ventricular cells from rat. Further studies on compounds **1** and **2** in *ex vivo* isolated right atria showed positive inotropic effects without disturbing the spontaneous beating rate. The inotropic effect of compounds **1** and **2** could be greatly abolished by pretreating the myocardium in Ca^{2+} -free solution. These findings indicate that compounds **1** and **2** can significantly increase the calcium ion concentration ($[\text{Ca}^{2+}]_i$) in myocytes, which is greatly dependent on the influx of extracellular Ca^{2+} .

Key words: *Tricholoma matsutake* Sing., Lactam Compounds, Positive Inotropic Effect