Ficain is an enzyme that is derived from figs latex.

It is of a family of proteases known as the cysteine endopeptidases, a group that also includes papain derived from papaya latex, bromelase (bromelain) extracted from pineapple stem, calpain, caspases, cathepsin B, and chymopapain. It is one of the most commonly used for differentiating many blood group antigens: For example, it destroys M, N, S, Duffy a, and Duffy b, and enhances some other antigens including antigens from the Rh, Kidd, Lewis, I, and P1 systems.

It is a common occurrence when eating the skins or the white pulp directly inside the skin of a fig to get a burning or itching sensation. This is due to the ficin in the latex (sap) of the fruit, particularly if it is unripened.

Dopamine (DA), a catecholamine neurotransmitter, is considered to be an important indicator for mental diseases detection in the clinic.

In a study, of Shi et al. from Chongqing a novel fluorescent sensing platform consisting of the ficin-H2O2-tyramine system for determining DA in cerebrospinal fluids (CSF) was established. The proposed method is based on the fact that ficin, a mimetic peroxidase, can catalyze H2O2 decomposition into OH radicals, which can oxidize non-fluorescent tyramine into fluorescent dityramine. When DA was introduced, DA can compete with tyramine for OH and resulting in the oxidation reaction of tyramine inhibited along with the fluorescence intensity of the system decreased, which provides a unique strategy for fluorescence detection of DA. Under optimal conditions, the fluorescence intensity decreased linearly with the DA level over a wide concentration range from 0.05 to 12.0 μM (R2 = 0.995) with a detection limit of 46 nM (3σ/k). More importantly, the proposed sensing approach exhibits high sensitivity, good selectivity and has been successfully applied to DA sensing in complex biological samples, which made it hold great potential for DA determination in chemical and biological analytical applications [1)].

1)
Shi Y, Pang Y, Huang N, Sun C, Pan Y, Cheng Y, Long Y, Zheng H. Competitive method for fluorescent dopamine detection in cerebrospinal fluid based on the peroxidase-like activity of ficin. Spectrochim Acta A Mol Biomol Spectrosc. 2018 Oct 16;209:8-13. doi: 10.1016/j.saa.2018.10.033. [Epub ahead of print] PubMed PMID: 30343110.