SynCTI SEMINAR SERIES

NUS Synthetic Biology for Clinical and Technological Innovation (NUS SynCTI)
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Biocatalysis of soybean isoflavonoids using various oxidoreductases: synthesis of hydroxyl-equol derivatives

Soybean plant originated from Manchuria are known to be spread out in world, and the regions from North Korea to Manchuria have the highest diversity of the soybean species worldwide. Isoflavonoids, one of the most well known soybean plant hormone including daidzein and genistein, are present mainly in the form of glycosides in soybean. In the plant, such isoflavonoid aglycone has anti-oxidative and antimicrobial functions for plant immune system. Similarly, the soy hormones are known to give some benefits to human health by promoting immunomodulation, pathogen recognition and anticancer activity, relieving vascular and epithermal disease, osteoporosis and obesity. Isoflavonoids(daidzein and genistein) are metabolized in human gut and converted to equol and hydroxy-equol, respectively by various oxidoreductases from gut microbiome. In this study, these enzymes used for the interesting biotransformation will be introduced and demonstrated to produce functional isoflavonoid derivatives in large scale, especially focused on synthesis of hydroxyl-equol derivatives.

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