



## Isolation, Oxygen-tolerant Domestication of Anaerobic Soy Isoflavone Metabolizing Bacteria and the Application of the Microbial Metabolites of Soy Isoflavones.

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### Abstract:

Epidemiologic as well as laboratory studies have shown that dietary soy isoflavones can exert multiple biological activities, including anticarcinogenic, antimutagenic and reduced risk of cardiovascular disease and potential protective role for osteoporosis and menopausal symptoms. Soy isoflavones are mainly composed of genistein and daidzein and undergo extensive metabolism in the intestinal tract prior to absorption. There has been growing interest in the microbial metabolites of soy isoflavones due to their wider or stronger bioactivities. To date, numerous particular bacteria responsible for isoflavone metabolism have been isolated and identified. However, all the reported isoflavone metabolizing bacteria are obligate anaerobes, which lack the ability to grow and convert isoflavones aerobically. After a long-term domestication, we obtained several oxygen-tolerant bacteria, which not only grew aerobically but also convert soy isoflavones to different metabolites in the presence of atmospheric oxygen. The obtained oxygen tolerant mutant strains differed from the original obligate anaerobic bacterial strains by various characteristics, including change in bacterial shape, in biochemical traits, etc. Enhanced production of the soy isoflavone metabolites by the oxygen-tolerant mutant strains was investigated. Moreover, our results demonstrated that equol, one metabolite of soy isoflavone daidzein, induced apoptosis in human hepatocellular carcinoma through the intrinsic pathway and the endoplasmic reticulum stress pathway. 5-hydroxy-equol, one metabolite of soy isoflavone genistein, significantly enhanced the lifespan and stress resistance of *Caenorhabditis elegans*.

### Biography:

Xiu-Ling Wang went to South Korea as a Chinese and Korean Government Exchange Program Scholarship Student and has completed her PhD at Seoul National University. She is the disciplined Leader of Microbiology in Agricultural University of Hebei. In 2015, she was awarded the National Prestigious and Moral Standard Teacher by the Chinese Ministry of Education. She has published more than 20 papers in reputed journals and has been serving as an



Editorial Board Member of both Chinese and English journals. She has obtained twelve government issued patents (the first inventor) since 2011.

### Publication of speakers:

1. **XL Wang** et al; The Mg-chelatase H subunit is an abscisic acid receptor.
2. **XL Wang** et al; A shift of phloem unloading from symplasmic to apoplasmic pathway is involved in developmental onset of ripening in grape berry
3. **XL Wang** et al; Enantioselective synthesis of S-equol from dihydrodaidzein by a newly isolated anaerobic human intestinal bacterium
4. **XL Wang** et al; Phylogeny, evolution, and biogeography of Asiatic Salamanders (Hynobiidae)
5. **XL Wang** et al; Abscisic acid activates acid invertases in developing grape berry

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