

Phytoestrogen Content of Fermented Lupin Tempeh and Natto

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Abstract : Tempeh is a traditional fermented soya bean food in Indonesia which is produced from de-hulled soya fermented with *Rhizopus oligosporus*. Natto is a traditional Japanese food made from whole soya bean seed fermentation with the bacteria *Bacillus subtilis natto*. Lupin is a grain legume with a low content of the phytoestrogenic isoflavones genistein and daidzein compared to soya. However due a comparable nutrition profile and increased cost effectiveness relative to soy, lupin has been substituted into various oriental fermented foods such as tempe and natto. Lupin tempeh and lupin natto were prepared using either WS or DHS. Analysis for genistein and daidzein content was conducted using HPLC for time points zero, 12h, 24h, 36h, 48h and 72h after fermentation. Results revealed that the amount of genistein and daidzein significantly increased with time in both tempeh and natto. Both isoflavones peaked at 48h in lupin tempeh and earlier at 36h in lupin natto. WS tempeh and WS natto had significantly more genistein than DHS tempeh and DHS natto. Daidzein content of DHS tended to be higher than WS across both products. It is concluded that, fermentation time increased the amount of genistein and daidzein content in both lupin tempeh and natto and the form of lupin raw material used affected the genistein level and to some extent the daidzein content of fermented products.

Keywords : lupin, natto, soya, tempeh

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