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Title: Dietary Administration of Daidzein, Chrysin, Caffeic Acid and Spironolactone on Growth, Sex Ratio and Bioaccumulation in Genetically All-Male and All-Female Nile Tilapia (*Oreochromis niloticus*)

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Abstract: Aromatase inhibitors can produce monosex populations of fish by blocking estrogen induced ovarian differentiation. Phytochemicals such as flavonoids and other phenolic compounds can exhibit aromatase inhibitor-like characteristics as reported for many of these compounds. Two experiments were conducted with genetically all-female or genetically all-male first feeding Nile tilapia to evaluate the potential *in vivo* aromatase inhibitory activity of three selected phytochemicals in parallel with synthetic steroidal compound treatments. Experimental diets were the following: control, 17 α -methyltestosterone (MT); 1,4,6-androstatrien-3-17-dione (ATD); spironolactone (SPIRO); daidzein (DAID); chrysin (CHR) and caffeic acid (CAFF) at different inclusion levels. Fish were fed for 6 weeks (all-male) and 8 weeks (all-female). Survival, final individual body weight and specific growth rate and final sex ratios were recorded. All phytochemicals were effectively detected using HPLC analyses. No differences were observed in survival, final mean weight, SGR between treatments in all-male tilapia. For all-female tilapia, MT and ATD groups showed significantly smaller final mean weights ($p < 0.05$); still, survival or SGR were not significantly different. Final sex ratios were as follows: for all-male juveniles no effect was observed in the final sex ratio for any of the phytochemicals or spironolactone. The sex ratio

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of genetically all-female tilapia was not affected by the inclusion of tested phytochemicals and spironolactone, while MT and ATD male ratios of 100% and 50%, respectively. Thus, selected dietary inclusion levels of phytochemicals did not exert an *in vivo* effect on sex differentiation in Nile tilapia.

This abstract was excerpted from the original paper, which was in the *Discourse Journal of Agriculture and Food Sciences* (2014), 2(3): 91-99.

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