

Traditional methods of preserving fish in Ghana is by smoking or drying, but open-air drying exposes fishes to contaminants resulting in poor quality products. The study was conducted to investigate the effect of using six different locally constructed solar dryers on the nutritional qualities of unsalted tilapia (*Oreochromis niloticus*). The experiment was carried out in March and April and repeated in June through July at the Department of Agricultural Engineering and Mechanisation of the University of Education, Winneba (Mampong-Ashanti). The solar panels were constructed using hard wood, nails, nylon net, chicken mesh and black and white polyethylene sheets. Eight samples of whole tilapia (265 - 315 g) were arranged in each panel in a completely randomised design. Solar panels recorded 45.4oC while the control panel (open air) recorded 34.0oC. Drying was completed by the fifth day but much more effective in the solar panels than the control. Tilapia in solar panels recorded less moisture but higher concentrations of nutrients on dry basis (db) than open-air dried salted tilapia. The solar-dried tilapia (db) recorded 8.44 to 14.76% moisture, 68.17- 75.98% protein, 6.21- 6.95% fat and 9.08-10.34% ash. Bacteria identified and isolated were *Escherichia coli*, *Staphylococcus* spp and *Salmonella* spp. with 2.322 log₁₀cfu/g and mould count of 3.015 log₁₀cfu/g. The highest sensory attribute scores were recorded in solar-dried tilapia, followed by fresh, frozen and dried salted tilapia. Fish mongers should be encouraged to solar-dry their catch to protect already depleted forests and preserve fish at reduced costs to maximise profits and improve upon standards of living. Key words: Rate Of Drying, Sensory Analysis, Solar Dryer, Tilapia, Total Viable Count.