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**Survey of pesticides in chicken carcasses and environments**

**of backyard raising system in rural area of Thailand**

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**Abstract:**

**Background/Objective:** Free-range native chickens are crucial in rural Thailand, providing protein and income for households. However, backyard chicken raising can expose them to pesticides, leading to potential health hazards and environmental pollution. The chicken raiser often use various pesticides without adequate training or awareness of potential dangers. Previous study on pesticide inspections in Mae Taeng District, Chiang Mai Province, found 58.2% contamination of organophosphate and carbamate in soil, water samples, and agricultural products. This study aims to explore the pesticides accumulating in chicken carcasses and the environmental conditions of backyard farming systems in rural areas of Thailand, as well as determine chicken raiser knowledge and practices regarding pesticide use.

**Methods:** The study site is Mae Taeng District, Chiang Mai Province, using 377 household samples to assess knowledge and practices regarding pesticide use in backyard chicken raising. The questionnaire covered demographics, pesticide knowledge, and risk behaviors. Additionally, 44 environmental (soil and water) and chicken carcass (chicken muscle and chicken liver) samples were collected from chemical and non-chemical areas for pesticide residue analysis using GT-Test kits for screening tests and HPLC for confirmation tests. The data were analyzed using descriptive and Chi-square statistics, with significance set at *p* ≤ 0.05.

**Results:** The study assessed backyard chicken farming in Thailand, with most farmers aged 61–70 having low incomes. They primarily raised chickens for household consumption, favoring free-range systems and feeding them household scraps. Chicken raisers indicate good knowledge of pesticide use but exhibited risky behaviors such as improper disposal of pesticide containers and inadequate safety measures during spraying, especially among older farmers, age of chicken raiser correlated significantly with pesticide knowledge (*p*<0.05). The study found non-detectable carbamate and organophosphate groups in chicken carcasses, soil, and water samples. In chemical-use areas, although the initial screening test by GT-test kit indicate positive results for soil samples in Sop Ping subdistrict, confirmation tests by HPLC revealed non-detected within the limits of detection (LOD).

**Conclusion:** The study found non contamination of carbamates and organophosphates in soil, water, and chicken carcasses in Mae Taeng District, Chiang Mai Province, and knowledge level about the use of about the proper use of pesticides non-significant with level of behavior of risk. It advises agencies and government agencies to use the study's findings to examine backyard chicken safety and educate poultry farmers about chemical use.

**Keywords:** Backyard chicken, Pesticides, Organophosphate, Carbamate