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# Evaluation of Socio-Economic Conditions and Constraints of Small-Scale Broiler Farming of North-West Bangladesh

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**Abstract:** Small-scale poultry production plays a crucial role in the socioeconomic development and nutritional needs of peri-urban households in Bangladesh. The study attempted to explore small-scale broiler farming in Ghagra, Boira, Sutiakhali, Khagdoher and Digharkanda Upazila of Mymensingh district. Both primary and secondary data were used in the study. The primary data were collected through face-to-face interviews with respondents from broiler farmers, whereas the secondary data were collected from the Department of Livestock Services, Bangladesh Bureau of Statistics, Poultry Production and Marketing Reports, Journals and the Department of Agricultural Marketing with the respondent's of broiler farmers. A total of 30 broiler farm owners were selected using a targeted sampling technique. In this study, out of thirty respondents, 56% were engaged directly in broiler farming, 20% were people in business, 17% were in crop farming and 7% were in other services. Findings showed that the total cost of broiler production per broiler was estimated at $2.09, whereas the gross yield per broiler was $2.65. Here, the Benefit-cost ratio was 1.26. Though the price varies in different seasons, the highest seasonal price index was found in June and the lowest in November. The percentage change in bank savings and other deposits each increased by 149% after the introduction of broiler farming. In contrast, improper management, disease outbreak, market volatility and many other factors were identified to sustain this rising prospect of small-scale poultry production potential. These research findings will suggest potential guidelines to sustain the small-scale sector in Bangladesh.

**Key words:** Broiler Farming · Rural Livelihood · Socio-Economic Development

## INTRODUCTION

Livestock farming is one of the important sectors of the national economy and contributes significantly to Bangladesh's agriculture and gross national product. The agricultural sector contributes 10.67% of GDP, while the livestock and poultry sub-sector accounts for 1.53% [1]. In addition, it is central to the rural economic system since as many households as possible in Bangladesh are directly or indirectly involved in animal husbandry. The poultry industry is one of the significant livestock sub-sectors committed to providing the nation with animal protein in the form of eggs and protein at a low cost [2]. It also plays a vital role in reducing malnutrition and boosting the country's agricultural sector [3]. In this manner, the poultry industry can attain the Sustainable Development Goals (SDGs) by reducing malnutrition and promoting better health in Bangladesh.

The poultry sector has proven to be an attractive sector for investment opportunities in Bangladesh [4]. Thus, in Bangladesh, the number of poultry farmers on a commercial basis is increasing, which is regularly growing. For example, the poultry population in Bangladesh was 2626.28 lakh in 2008-2009, which increased to 3379.98 lakh in 2017-18 [5]. Despite this, aviculture is mainly a substance practice, but poultry is mostly commercially

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produced in Bangladesh. Poultry meat, especially from broilers, is superior to other meats available for human consumption as it is tender, tasty and easily digestible. Interestingly, a broiler requires less capital and has a shorter production life cycle than other meat-producing animals [6].

In recent years there has been growing recognition among the developed community of the role of small-scale commercial broiler production in accelerating the pace of poverty reduction and reaching out to the poorest of the poor [7-10]. For smallholder farmers in developing countries, family poultry represents one of the opportunities for saving, investment and security against risk [11]. In Bangladesh, small-scale broiler farming represents more than 80 percent of the total poultry production and 90 percent of the 18 million rural households keep poultry. Around 20 percent of landless families in Bangladesh are involved in broiler farming [12]. The demand for broilers has been continually increasing and millions of people have been engaged in the production and farming of broilers almost everywhere in Bangladesh [13]. Similarly, family poultry represents 83 percent of Nigeria's estimated 82 million adult chickens. In Ethiopia, rural poultry accounts for 99 percent of the total national production of poultry meat and eggs [14]. Small-scale broiler farming has also successfully enabled the transfer of improved technology and the integration of smallholders into an economy that embraces modernization and globalization. About 70 percent of people suffer from malnutrition in Bangladesh [15]. It is also well-accepted that small-scale family poultry provides a balanced diet and helps alleviate poverty in rural areas [16, 26]. Earning from household poultry has a potential impact on total income. It helps to make a better choice. Household poultry improves the livelihood of poultry farmers and their family members [17]. The broiler meat is also digestible with less fat compared with other animals. Household broiler production provides balance protein for the family [18].

In Bangladesh, poultry farming contributes to the employment sector by creating more than 6 million jobs through direct and indirect employment, including support services [19]. Though, poultry production in rural areas suffers from serious issues, including problems with housing, feeding, diseases and other facilities, as well as a lack of rural farmers' knowledge of various aspects of poultry production, such as quality of feed, disease prevention and control techniques. Given this backdrop, the overall objective of the present study is to evaluate the socio-economic conditions and constraints of small-scale broiler farmers in Mymensingh district, Bangladesh.

## MATERIALS AND METHODS

**Study Area:** The experiment was conducted at Mymensingh Sadar Upazila, Mymensingh, Bangladesh, from March 2018 to April 2018. The geographical coordinates of the site are 24°38' 3"N latitude and 90°16' 4" E longitude, which fall under the AEZ 22, i.e., Northern and Western Piedmont Plains. Mymensingh Sadar Upazila had an exemplary communications system. The area was more accessible to the researcher familiar with the local language. In Sadar Upazila of Mymensingh, many families rear broilers in their households.

**Method of Investigation:** Necessary data were collected using a structured questionnaire through face to face interview method. The study uses the descriptive approach to research. The respondents were mainly broiler farm owners. Asuccessful and a failed broiler farmer from the study areas were also interviewed for the case study.

**Sampling Design:** A total of 30 farmers were interviewed using structured and pre-tested interview schedules. Primary data was collected on a memory recall basis for one production cycle. Data on small-scale broiler farming were collected from several broiler farming through personal communication. A purposive sampling technique was used for selecting sample broiler farms from the study areas.

**Data Collection:** Data were collected from both primary and secondary sources. Primary data were collected through face-to-face interviews between the researcher and the respondents. Secondary data were collected from different agricultural personnel, Govt. Authority and Journals.

**Data Analysis:** After collecting data, they were coded and tabulated in a sheet. Then the data were analyzed using SPSS software version 20. Various descriptive statistical measures (CV), $R^2$ and rank order were used for categorization and describing the variables.

## RESULTS

**Socioeconomic Characteristics of the Sample Households:** There is no significant difference in variables of age, education, experience, family member, landholdings and average batches per year among the farmers. Therefore, all sample farmers could have the same socio-economic background. In the study areas,

Table 1: Occupational statuses of broiler farm owners

| | Main occupation | | Subsidiary occupation | |
|---|---|---|---|---|
| Occupation | Number of farmers | Percent | Number of farmers | Percent |
| Only broiler | 17 | 56 | 22 | 78 |
| Agriculture | 5 | 17 | 3 | 11 |
| Service | 2 | 7 | - | - |
| Business | 6 | 20 | 3 | 11 |
| Total | 30 | 100.00 | 28 | 100.00 |

Table 2: Annual income levels of sample farmers (Except broiler farm income)

| Monthly income level (Tk.) | Number of farmers (n=30) | Percent |
|---|---|---|
| Less than or equal 15, 000 | 13 | 43 |
| 15, 001 - 25, 000 | 9 | 30 |
| 25, 001-35, 000 | 5 | 17 |
| 35, 001 and above | 3 | 10 |
| Total | 30 | 100 |

Table 3: Farm size of sample farmers

| Farm size (Number of birds) | Number of farmers | Percent |
|---|---|---|
| 100 to 500 | 12 | 40 |
| 501 to 1000 | 14 | 47 |
| 1001 to 2000 | 4 | 13 |
| Total | 30 | 100 |

Table 4: Business experience of broiler farm owners

| Years of experience | Number of farmers | Percent |
|---|---|---|
| Up to 2 years | 12 | 40 |
| 2.1 - 4 years | 6 | 20 |
| 4.1 - 6 years | 9 | 30 |
| Above 6 years | 3 | 10 |
| Total | 30 | 100 |

Table 5: Training of broiler farm owners

| Status of farmers | Number of farmers | Percent |
|---|---|---|
| With training | 6 | 20 |
| Without training | 24 | 80 |
| Total | 30 | 100 |

the broiler farm owners were involved in different subsidiary occupations with broiler farming. Here the main work refers to that occupation from which a major portion of income is derived and the subsidiary occupation is one from which a minor portion of income is derived. Table 1 shows that out of 30 broiler farmers, 56 percent were involved in broiler farming, 17 percent in agriculture, 7 percent in service and 20 percent in business as their main occupations. On the other hand, 78 percent, 11 percent and 11 percent of broiler farmers were related to broiler farming, agriculture and business as their subsidiary occupation. People with broiler farming as a subsidiary occupation tend to invest in broiler enterprises as another source of income. The different occupations of the sample farmers are given in Table 1.

Monthly income was calculated from the average yearly income of each farmer. The selected farmer's monthly income was calculated without broiler farm income. The selected broiler farmers were grouped into four categories according to their annual income, which is shown in Table 2

In broiler farming, the farm size refers to the number of broilers raised per batch. Most of the broiler farms were found to be situated in the homestead area, but some farms were near the homestead. The sample farmers were categorized into three groups according to their farm's size i.e., 100 to 500 birds, 501 to 1000 birds and 1001 to 2000 birds. Table 3 indicates that 40 percent of farmers had 100 to 500 broiler birds of each, 47 percent had 501 to 1000 birds and 13 percent had above 1000 birds. The average number of birds per farm was 1090. The farm sizes of the broiler-raising farmers are presented in Table 3.

The sampled broiler farms in the study areas have been established in different years. Table 4 shows that 40 percent of farmers had experience above two years in broiler farming, which includes the highest number of farmers 12.

Training on broiler raising is necessary for successful broiler farming. So many public and private sectors provide essential training to broiler farm owners. It is indicated in Table 5 that about 80 percent of the farm owners started broiler farming without having any formal training. In comparison, 20 percent of farmers received training before starting their broiler farming business.

**Cost of Broiler Production:** In the present study, the total cost of broiler production was estimated at USD 2285.39 per farm per batch of live broilers for an average number of broilers of 1090 per batch per farm. Table 6 represents the total costs of broiler production per batch. Total variable and fixed costs were USD 2222.96 and USD 62.42, which covered 97.27 and 2.73 percent of the total cost, respectively. Broiler farm owners reported that they rear one batch of broilers for 42-58 days and then sell them all together.

Table 6: Datasets of cost of broiler production per farm per batch

| | | Per farm per batch (1090 broiler) | |
|---|---|---|---|
| Cost Items | Unit Price (USD) | Quantity | Total cost (USD) |
| A. Fixed cost | | | |
| 1. Depreciation on | | | |
| Housing | | | 11.97 |
| 2. Depreciation on | | | |
| Tools & equipment | | | 24.91 |
| 3. Land use cost | | | 25.54 |
| Total fixed cost | | | 62.42 |
| B. Variable cost | | | |
| Day old chick (DOC) Cost | 0.68 | 1090 | 743.76 |
| Feed cost (Kg) | 0.52 | 2420 | 1261.25 |
| Family Labor cost (Man/day) | | | 26.56 |
| Hired labor cost (Man/day) | | | 29.97 |
| Electricity charges (USD) | | | 14.99 |
| Veterinary cost (USD) | | | 80.67 |
| Transportation cost (USD) | | | 36.60 |
| Miscellaneous Charges (USD) | | | 16.01 |
| Other costs (USD) | | | 13.14 |
| Total variable cost per batch per farm | | | 2222.96 |
| Total cost (A+B) per batch per farm | | | 2285.39 |
| Total cost (per broiler) | | | 2.09 |

Table 7: Returns from broiler production

| | | | Per Batch | |
|---|---|---|---|---|
| Items | Average weight per Broiler (Kg) | Average price (USD) | Quantity | Value (USD) |
| 1.Live Broiler | 1.65 | 1.57/kg | 1090 | 2823.645 |
| 2.Feed Sacks | | 0.13/sack | 540 | 70.2 |
| Gross Return (1+2) | | | | 2893.845 |
| Gross Return (per broiler) | | | | 2.65 |

Table 8: Descriptive statistics of savings and loan structures of broiler farmers

| Particulars | Increased | Decreased | Unchanged | S.D | S.E | $R^2$ value P<0.05 |
|---|---|---|---|---|---|---|
| Deposit in bank | 28 | 0 | 2 | 15.6204 | 9.0184 | 0.692 |
| Other deposit | 17 | 0 | 13 | 8.888 | 5.131 | 0.050 |
| Bank loan | 0 | 26 | 4 | 14 | 8.0829 | 0.020 |
| Other loans | 0 | 28 | 2 | 15.6205 | 9.018 | 0.004 |

*S.D= Standard Deviation, S.E= Standard Error

**Returns from Broiler Production:** Gross return was determined by adding income earned from selling a live broiler, used litter and excreta (feed sack). Table 7 shows that the average price per kilogram of live broilers received by the farm owners was USD 1.57. On the other hand, prices per feed sack were 0.13 and they also sold used litter. The gross return per farm per batch was USD 2893.845.

**Benefit-Cost Ratio (BCR):** The total benefit-cost ratio is 1.26. The result seems that broiler farming is a profitable enterprise for the farmers in the study area.

**Current Savings:** The percentage change of savings with banks and other deposits increased by 149% after broiler farming adoption (Table 8). These changes were bearing a direct financial impact on investment in the broiler business due to the adoption of small-scale commercial broiler farming.

**Changes in Possession of Household Assets:** The increased income of the respondents through their participation in broiler farming is also reflected in possession of household assets. Family assets like television, house (building/teen shed), straw/thatched

Table 9: Descriptive statistics of different assets of broiler farmers

| Household assets (Mean %) | Before | After | % Change | S.D | S.E | $R^2$ Value |
|---|---|---|---|---|---|---|
| House (building/teen shed) | 0.97 | 1.67 | 72.17 | 0.494 | 0.35 | 1 |
| Straw/thatched House | 0.93 | 1.10 | 18.28 | 0.120 | 0.085 | 1 |
| Motor van | 0.23 | 0.33 | 43.47 | 0.07 | 0.05 | 1 |
| Motor cycle | 0.43 | 0.73 | 69.77 | 0.212 | 0.15 | 1 |
| Mobile phone | 1.16 | 2.23 | 92.24 | 0.756 | 0.53 | 1 |

*S.D= Standard Deviation, S.E= Standard Error.

Table 10: Problems faced by the broiler farm owners

| Problems | No. of farmer respondents (n=30) | Percentage |
|---|---|---|
| A. Production problems: | | |
| a) High price of day-old chick | 19 | 63 |
| b) Higher price of feed | 25 | 83 |
| c) Growth problem | 1 | 3 |
| d) High mortality rate | 6 | 20 |
| e) Irregular electricity supply | 30 | 100 |
| f) Lack of capital | 15 | 50 |
| g) Non-availability of day-old chicks | 12 | 40 |
| h) Lack of training facilities | 22 | 73 |
| a) Lower price of broiler | 18 | 60 |
| B. Marketing problems | | |
| b) Price fluctuation of broiler | 23 | 77 |
| c) Irregular payment | 28 | 93 |
| d) Rumor | 8 | 27 |
| C. Social and natural problems: | | |
| a) Outbreak of diseases | 25 | 83 |
| b) Pollution of the environment | 2 | 7 |
| c) Predator animals | 3 | 10 |

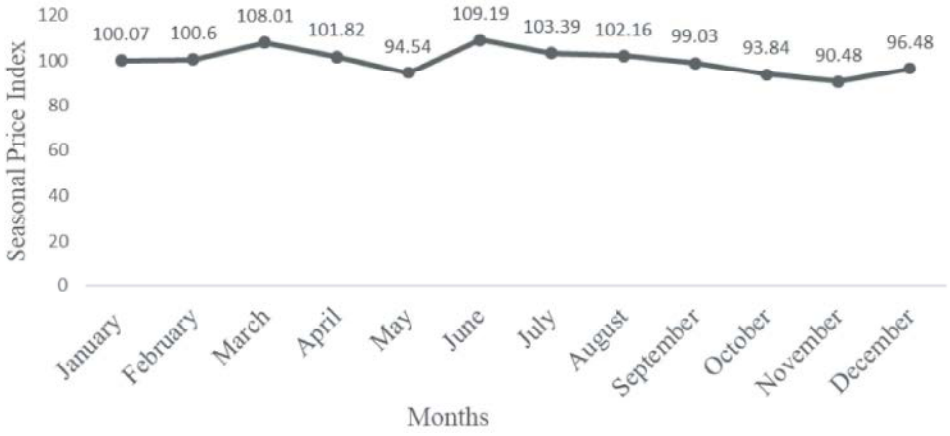


Fig. 1: Seasonal price variation of broiler in the Mymensingh market

house, motor van and mobile phone were increased by 75%, 43.75%, 125.0%, 133.33% and 76.47%, respectively, after adopting broiler farming. Table 9 also revealed that based on the number of respondents, ownership of household assets of the broiler farmers was also found to show an increasing trend.

**Measurement of Seasonal Price Variation of Broiler:** In order to measure the seasonality in prices, seasonal indices were constructed by taking 12 months centered moving averages at the Sadar Upazila of Mymensingh local market. The calculated indices were adjusted to 100, so the total of seasonal indices for the twelve months adds up to exactly 1200. The monthly market price indices of broilers for the Mymensingh market have been presented in Fig. 1. It is evident from Fig. 1 that the highest price index of broilers was 109.19 in June, i.e., the price of broilers in June is about 9 percent higher than the average price of the year and lowest was in November (90.48), i.e., price of broiler in this month is

about 10 percent lower than the average price of the year. The critical feature of broiler prices was low fluctuation from September to December. And high price fluctuation was observed during the month from March to July. And the price becomes more or less the same in January and February. This implies that during this period, the supply matched the demand for the broiler. Fig. 1 also showed that the difference between the highest and lowest indices was 18.71

**Problems of Boiler Farming and Marketing:** The major problems identified by the broiler farmers under the study were the high price of day-old chicks, high price of feed, insufficient growth, shortage of electricity, lack of credit, low price of broiler, an outbreak of diseases, pollution of the environment, etc. The problems are mentioned in Table 10.

## DISCUSSIONS

Findings indicate that the poultry sector in rural areas makes farmers economically benefit and develop their livelihood. Nyayak *et al*. [25] found similar types of results. However, economic analyses of the smallholder commercial sector indicate a dwindling return rate. It seems unlikely that the small-scale sector will be sustained in the present market [20]. On the other hand, the study indicates that if poultry activities are a more reliable strategy may be developed to help poor and marginalized farmers improve their livelihoods. Taking an integrated farming systems approach, among other things, implies identifying possible means of using existing on-farm resources to enhance the outputs of the farms [21]. It may be argued that groups formed in a participatory bottom-up approach will enroll fewer participants, as poultry may not be their primary interest and their risk-averse nature will make them choose other activities [22]. The present study indicates that the majority enrolled in poultry to get access to credit. Sustainability would be more likely if farmers were involved in poultry activities mainly because of their interest [23]. Poor people groups can develop their status by poultry farming in their village [24].

## CONCLUSION

The outcome of this study area will be useful for farmers and researchers to identify the common problems and their remedies related to feeding, management and marketing related to broiler production. The results may provide valuable information for properly administrating small-scale broilers in rural areas of Bangladesh.

## REFERENCES


1. BER, 2018. Bangladesh Economic Review. Ministry of Finance, Government of the People's Republic of Bangladesh.
2. Das, S.C., S.D. Chowdhury, M.A. Khatun, M. Nishibori and Y. Yoshimura, 2008. Poultry production profile and expected future projection in Bangladesh. World's Poultry Science Journal, 64: 98-118.
3. Silva, C.A.D. and M. Rankin, 2014. Contract Farming for Inclusive Market Access. Food and Agriculture Organization of the United Nations, Rome, Italy, pp: 227.
4. Ansarey, F.H., 2012. Prospects of poultry industry in Bangladesh. In: Proceedings of the Seminar and Reception on Animal Husbandry Education and Profession in Bangladesh- A Journey of 50 Years. (AHEPB'12), Dhaka, Bangladesh, pp: 62-65.
5. Hamid, M.A., M.A. Rahman, S. Ahmed and K.M. Hossain, 2017. Status of poultry industry in Bangladesh and the role of private sector for its development. Asian Journal of Poultry Science, 11: 1-13.
6. DLS, 2018. General Information Related to Livestock. Ministry of Fisheries and Livestock Bulletin. Published by Fisheries and Livestock Information Office. Khamarbari, Farmgate, Dhaka, Bangladesh.
7. Alam, J., 2007 An Economic Analysis of Poultry Marketing of Mymensingh District: A Micro Level Study (in Bangladesh). Bangladesh Journal of Animal Science, 21(2): 51-57.
8. Branckaert, R.D.S., 2006. Impact of small holder livestock development project in some selected areas of rural Bangladesh. Livestock Research for rural Development, 9(3): 12-22.
9. BBS (Bangladesh Bureau of Statistics), 2010. Statistical Yearbook of Bangladesh-2010, Statistics Division, Ministry of Planning, Government of the People’s Republic of Bangladesh, Dhaka.
10. BBS (Bangladesh Bureau of Statistics), 2013. Statistical Yearbook of Bangladesh-2012, Statistics Division. Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.
11. Faruque, M., 2011. Conservation and Improvement of Indigenous Chicken. Paper presented in annual research review workshop, Bangladesh Livestock Research Institute, Savar, Dhaka-1341. pp: 24-25.
12. Hossain, K., 2004. Growth performance and meat yield of Naked Neck and broiler chicken in a hot humid environment. The Bangladesh Veterinarian, 8(1-2): 4-7.

13. Karim, R., 2010. Economics of Commercial Poultry Farming in Bangladesh. Bureau of socioeconomic Research and Training, Bangladesh Agriculture University, Mymensingh, Bangladesh, Report No. 21.
14. Kim, J.M., 1998. Economic Analysis of Broiler Production in Korea (1980-95). Acta-AgrariaKa. 2(1).
15. Rahaman, M., 2012. Effect of Supplementary Feeding on Production Performance of RIR, Fayoumi and their Crossbred Chicken in Rural Bangladesh. Bangladesh Journal of Livestock Research, 5: 184-193.
16. Sarker, S.M., 2002. A Livestock Development Approach that contributes to poverty Alleviation and Widespread Improvement of Nutrition Among the Poor. Livestock Research for Rural Development, 13(5): 65-72.
17. Tadelle, D., Y. Alemu and K.J. Peters, 2000. Indigenous chicken in Ethiopia: Genetic potential and attempts at improvement. Poultry Science, 56: 45-54.
18. Raha, S.K., 1995. "Broiler Industry in Bangladesh: Some Issues", Proceedings of the 5th International Poultry Show and Seminar, March 01-03, 2007. Organized by World's Poultry Science Association, Bangladesh Branch, Dhaka, Bangladesh.
19. Jabbar, M.S. and D.A.G. Green, 1983. The Status and Potential of Livestock within the Context of Agricultural Development Policy of Bangladesh. The University College of Wales, Aberystwyth, UK.
20. Gupta, D.S., 1997. Pig-The Meat Bank: Financing Agriculture, (5th ed.). Oxford and IBH Publishers, Calcutta.
21. FAO, 2009. Food and Agriculture Organization of the United Nations. 2008. Contract farming – partnerships for growth, by C. Eaton & A. Shepherd. AGS Bulletin No.145. Rome.
22. DAM (Department of Agricultural Marketing), 2014. District-wise Monthly Average Wholesale/Retail/Growers' Price of a Selected Commodity, Ministry of Agriculture, Government of the People's Republic of Bangladesh, Dhaka.
23. Huque, 2012. Rural Poultry in Bangladesh Economy. Proceedings of 4th National Conference of Bangladesh Animal Husbandry Association.
24. Mian, M.S., M.M. Hasan, M.A. Habib and A. Khayer, 2019. Effects on the Growth Performance and Survival Rate of Pangasius hypophthalamus in Different Feeding Rate of Complete Diet. Middle East Journal of Scientific Research, 27(1): 39-54.
25. Nayak, G.D., K.K. Sardar and B.C. Das, 2020. Socio-economic Condition of Khadia Poultry Farmers and Phenotypic Characteristics of Khadia Chicken of Northern Odisha, India. International Journal of Current Microbiology and Applied Sciences, 9(1): 1395-1404.
26. Tasin, T., M.H. Ferdous, M. Mithu and M. Hasan, 2022. Assessment of Farmers on Their Knowledge of Pesticide Use, Biosafety and Occupational Health Hazards in Bangladesh. American-Eurasian Journal of Toxicological Sciences, 4(1): 01-07.