

# Smart Contract Security Audit

**AUDIT RATE TECH**

**for**

**Shih Tzu**



### Ownership:

- *Owned*

### Set fees:

- *Can set up to 15% for buy and 20% for sell*

### Mint functions:

- *Not found*

### Max tx amount:

- *Can set  $\geq 0.01\%$  of total supply*

### Stop or pause trading:

- *Can pause trading*

### Blacklist:

- *Can blacklist*

## ***Disclaimer***

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

DISCLAIMER: By reading this report or any part of it, you agree to the terms of this disclaimer. If you do not agree to the terms, then please immediately cease reading this report, and delete and destroy any and all copies of this report downloaded and/or printed by you. This report is provided for information purposes only and on a non-reliance basis, and does not constitute investment advice. No one shall have any right to rely on the report or its contents, and AUDIT RATE TECH and its affiliates (including holding companies, shareholders, subsidiaries, employees, directors, officers and other representatives) (AUDIT RATE TECH) owe no duty of care towards you or any other person, nor does AUDIT RATE TECH make any warranty or representation to any person on the accuracy or completeness of the report. The report is provided "as is", without any conditions, warranties or other terms of any kind except as set out in this disclaimer, and AUDIT RATE TECH hereby excludes all representations, warranties, conditions and other terms (including, without limitation, the warranties implied by law of satisfactory quality, fitness for purpose and the use of reasonable care and skill) which, but for this clause, might have effect in relation to the report. Except and only to the extent that it is prohibited by law, AUDIT RATE TECH hereby excludes all liability and responsibility, and neither you nor any other person shall have any claim against AUDIT RATE TECH, for any amount or kind of loss or damage that may result to you or any other person (including without limitation, any direct, indirect, special, punitive, consequential or pure economic loss or damages, or any loss of income, profits, goodwill, data, contracts, use of money, or business interruption, and whether in delict, tort (including without limitation negligence), contract, breach of statutory duty, misrepresentation (whether innocent or negligent) or otherwise under any claim of any nature whatsoever in any jurisdiction) in any way arising from or connected with this report and the use, inability to use or the results of use of this report, and any reliance on this report.

The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

## ***Audit details:***

Audited project: Shih Tzu

Total supply: 1,000,000,000,000

Token ticker: SHIH

Decimals: 18

Contract address: 0x11fd3FE8A71c0ba52E0daeEA9c90cd85003524EC

Languages: Solidity (Smart contract)

Platforms and Tools: Remix IDE, Truffle, Truffle Team, Ganache, Solhint, VScode, Mythril,

Contract Library

Compiler Version: v0.8.13+commit.abaa5c0e

Optimization Enabled: Yes with 200 runs

Contract Deployer Address: 0x57900D40fb3a644E995cb76008Cd69576425E376

Blockchain: Binance Smart Chain

Project website: <https://shih-tzu.io/>

The audit items and results:

(Other unknown security vulnerabilities are not included in the audit responsibility scope)

Audit Result: Passed

Audit Date: September 01, 2022

Audit Team: AUDIT RATE TECH

<https://www.auditrate.tech/>

## ***Introduction***

This Audit Report mainly focuses on the overall security of Shih Tzu Smart Contract. With this report, we have tried to ensure the reliability and correctness of their smart contract by complete and rigorous assessment of their system's architecture and the smart contract codebase.

### ***Auditing Approach and Methodologies applied***

The AUDIT RATE TECH team has performed rigorous testing of the project starting with analyzing the code design patterns in which we reviewed the smart contract architecture to ensure it is structured and safe use of third-party smart contracts and libraries.

Our team then performed a formal line by line inspection of the Smart Contract to find any potential issue like race conditions, transaction-ordering dependence, timestamp dependence, and denial of service attacks.

In the Unit testing Phase, we coded/conducted custom unit tests written for each function in the contract to verify that each function works as expected.

In Automated Testing, we tested the Smart Contract with our in-house developed tools to identify vulnerabilities and security flaws.

The code was tested in collaboration of our multiple team members and this included -

- Testing the functionality of the Smart Contract to determine proper logic has been followed throughout the whole process.
- Analyzing the complexity of the code in depth and detailed, manual review of the code, lineby-line.
- Deploying the code on testnet using multiple clients to run live tests.
- Analyzing failure preparations to check how the Smart Contract performs in case of any bugs and vulnerabilities.
- Checking whether all the libraries used in the code are on the latest version.
- Analyzing the security of the on-chain data.

## ***Audit Goals***

The focus of the audit was to verify that the Smart Contract System is secure, resilient and working according to the specifications. The audit activities can be grouped in the following three categories:

**Security**

Identifying security related issues within each contract and the system of contract.

**Sound Architecture**

Evaluation of the architecture of this system through the lens of established smart contract best practices and general software best practices.

**Code Correctness and Quality**

A full review of the contract source code. The primary areas of focus include:

- Accuracy
- Readability
- Sections of code with high complexity
- Quantity and quality of test coverage

## ***Issue Categories***

Every issue in this report was assigned a severity level from the following:

### ***High level severity issues***

Issues on this level are critical to the smart contract's performance/functionality and should be fixed before moving to a live environment.

### ***Medium level severity issues***

Issues on this level could potentially bring problems and should eventually be fixed.

### ***Low level severity issues***

Issues on this level are minor details and warnings that can remain unfixed but would be better fixed at some point in the future.

### ***Manual Audit:***

For this section the code was tested/read line by line by our developers. We also used Remix IDE's JavaScript VM and Kovan networks to test the contract functionality.

### ***Automated Audit***

**Remix Compiler Warnings**

It throws warnings by Solidity's compiler. If it encounters any errors the contract cannot be compiled and deployed. No issues found.

# Issues Checking Status

SWC ID	Description	Checking status
SWC-100	Function Default Visibility	Passed
SWC-101	Integer Overflow and Underflow	Passed
SWC-102	Outdated Compiler Version	Passed
SWC-103	Floating Pragma	Passed
SWC-104	Unchecked Call Return Value	Passed
SWC-105	Unprotected Ether Withdrawal	Passed
SWC-106	Unprotected SELFDESTRUCT Instruction	Passed
SWC-107	Reentrancy	Passed
SWC-108	State Variable Default Visibility	Passed
SWC-109	Uninitialized Storage Pointer	Passed
SWC-110	Assert Violation	Passed
SWC-111	Use of Deprecated Solidity Functions	Passed
SWC-112	Delegatecall to Untrusted Callee	Passed
SWC-113	DoS with Failed Call	Passed
SWC-114	Transaction Order Dependence	Passed
SWC-115	Authorization through tx.origin	Passed
SWC-116	Block values as a proxy for time	Passed
SWC-117	Signature Malleability	Passed
SWC-118	Incorrect Constructor Name	Passed
SWC-119	Shadowing State Variables	Passed
SWC-120	Weak Sources of Randomness from Chain Attributes	Passed
SWC-121	Missing Protection against Signature Replay Attacks	Passed
SWC-122	Lack of Proper Signature Verification	Passed
SWC-123	Requirement Violation	Passed
SWC-124	Write to Arbitrary Storage Location	Passed
SWC-125	Incorrect Inheritance Order	Passed
SWC-126	Insufficient Gas Griefing	Passed
SWC-127	Arbitrary Jump with Function Type Variable	Passed
SWC-128	DoS With Block Gas Limit	Passed
SWC-129	Typographical Error	Passed
SWC-130	Right-To-Left-Override control character (U+202E)	Passed
SWC-131	Presence of unused variables	Passed
SWC-132	Unexpected Ether balance	Passed
SWC-133	Hash Collisions With Multiple Variable Length Arguments	Passed
SWC-134	Message call with hardcoded gas amount	Passed
SWC-135	Code With No Effects	Passed
SWC-136	Unencrypted Private Data On-Chain	Passed

## ***Owner privileges***

308 renounceOwnership  
313 transferOwnership  
537 addPresaleAddressForExclusions  
545 enableTrading  
562 removeBoughtEarly  
567 emergencyUpdateRouter  
573 disableTransferDelay  
577 updateMaxBuyAmount  
590 updateMaxSellAmount  
603 updateMaxWalletAmount  
617 updateSwapTokensAtAmount  
636 airdropToWallets  
655 excludeFromMaxTransaction  
668 setAutomatedMarketMakerPair  
686 updateBuyFees  
698 updateSellFees  
710 restoreTaxes  
717 excludeFromFees  
958 transferForeignToken  
974 withdrawStuckETH  
981 setOperationsAddress  
993 setBurnAddress  
1000 forceSwapBack  
1011 removeLimits  
1015 restoreLimits



## Top Token Holders

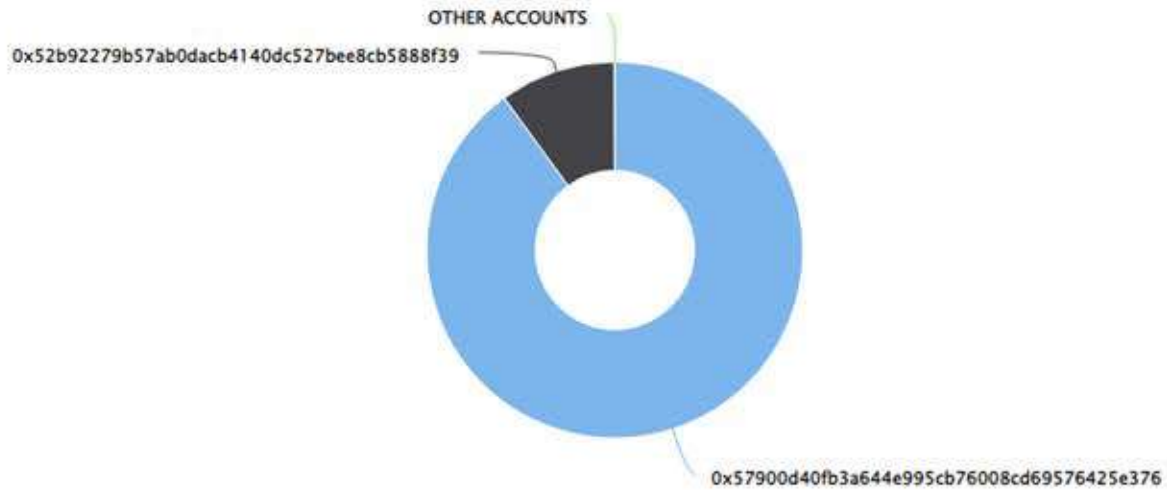
At the time of the audit

The top 3 holders collectively own 100.00% (1,000,000,000,000.00 Tokens) of Shih Tzu

Token Total Supply: 1,000,000,000,000.00 Token | Total Token Holders: 2

### Shih Tzu Top 3 Token Holders

Source: BscScan.com



(A total of 1,000,000,000,000.00 tokens held by the top 3 accounts from the total supply of 1,000,000,000,000.00 token)

Rank	Address	Quantity (Token)	Percentage
1	0x57900d40fb3a644e995cb76008cd69576425e376	900,000,000,000	90.0000%
2	0x52b92279b57ab0dadb4140dc527bee8cb5888f39	100,000,000,000	10.0000%

## KYC/Doxx

At the time of the audit, there is no information about the conduct of KYC / Doxx

## Conclusion

### Owner can set fees up to 15% for buy and 20% for sell

```
function updateBuyFees(uint256 _operationsFee, uint256 _liquidityFee, uint256 _burnFee) external onlyOwner {
    buyOperationsFee = _operationsFee;
    buyLiquidityFee = _liquidityFee;
    buyBurnFee = _burnFee;
    buyTotalFees = buyOperationsFee + buyLiquidityFee + buyBurnFee;
    require(buyTotalFees <= 15, "Must keep fees at 15% or less");
}
function updateSellFees(uint256 _operationsFee, uint256 _liquidityFee, uint256 _burnFee) external onlyOwner {
    sellOperationsFee = _operationsFee;
    sellLiquidityFee = _liquidityFee;
    sellBurnFee = _burnFee;
    sellTotalFees = sellOperationsFee + sellLiquidityFee + sellBurnFee;
    require(sellTotalFees <= 20, "Must keep fees at 20% or less");
}
```

### No mint function found

### Owner can max tx amount $\geq 0.01\%$ of total supply

```
function updateMaxBuyAmount(uint256 newNum) external onlyOwner {
    require(
        newNum >= ((totalSupply() * 1) / 10000) / 1e18,
        "Cannot set max buy amount lower than 0.01%");
    require(
        newNum <= ((totalSupply() * 2) / 100) / 1e18,
        "Cannot set max buy amount higher than 2%");
    maxBuyAmount = newNum * (1e18);
    emit UpdatedMaxBuyAmount(maxBuyAmount);
}
function updateMaxSellAmount(uint256 newNum) external onlyOwner {
    require(
        newNum >= ((totalSupply() * 1) / 10000) / 1e18,
        "Cannot set max sell amount lower than 0.01%");
    require(
        newNum <= ((totalSupply() * 2) / 100) / 1e18,
        "Cannot set max sell amount higher than 2%");
    maxSellAmount = newNum * (1e18);
    emit UpdatedMaxSellAmount(maxSellAmount);
}
```

### Owner can pause trading

```
function enableTrading(uint256 blocksForPenalty) external onlyOwner {
    require(!tradingActive, "Cannot reenable trading");
    require( blocksForPenalty <= 10,
        "Cannot make penalty blocks more than 10" );
    tradingActive = true;
    swapEnabled = true;
    tradingActiveBlock = block.number;
    blockForPenaltyEnd = tradingActiveBlock + blocksForPenalty;
    emit EnabledTrading(); }
}
```

### Owner can blacklist

```
function removeBoughtEarly(address wallet) external onlyOwner {
    require(boughtEarly[wallet], "Wallet is already not flagged.");
    boughtEarly[wallet] = false;
}
```

## Owner can change burn address

```
burnAddress = address(0xdead);  
function setBurnAddress(address _burnAddress) external onlyOwner {  
    require(_burnAddress != address(0), "_burnAddress address cannot be 0");  
    burnAddress = payable(_burnAddress);  
    emit UpdatedBurnAddress(_burnAddress); }
```

### **Note:**

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner. The analysis of the contract does not give complete security and includes only the analysis that is indicated in the report. We do not analyze locked tokens or LP tokens, the presence of KYC in other companies, and so on. Also, our audit is not a recommendation for investment. All responsibility for the loss of investment lies with you!