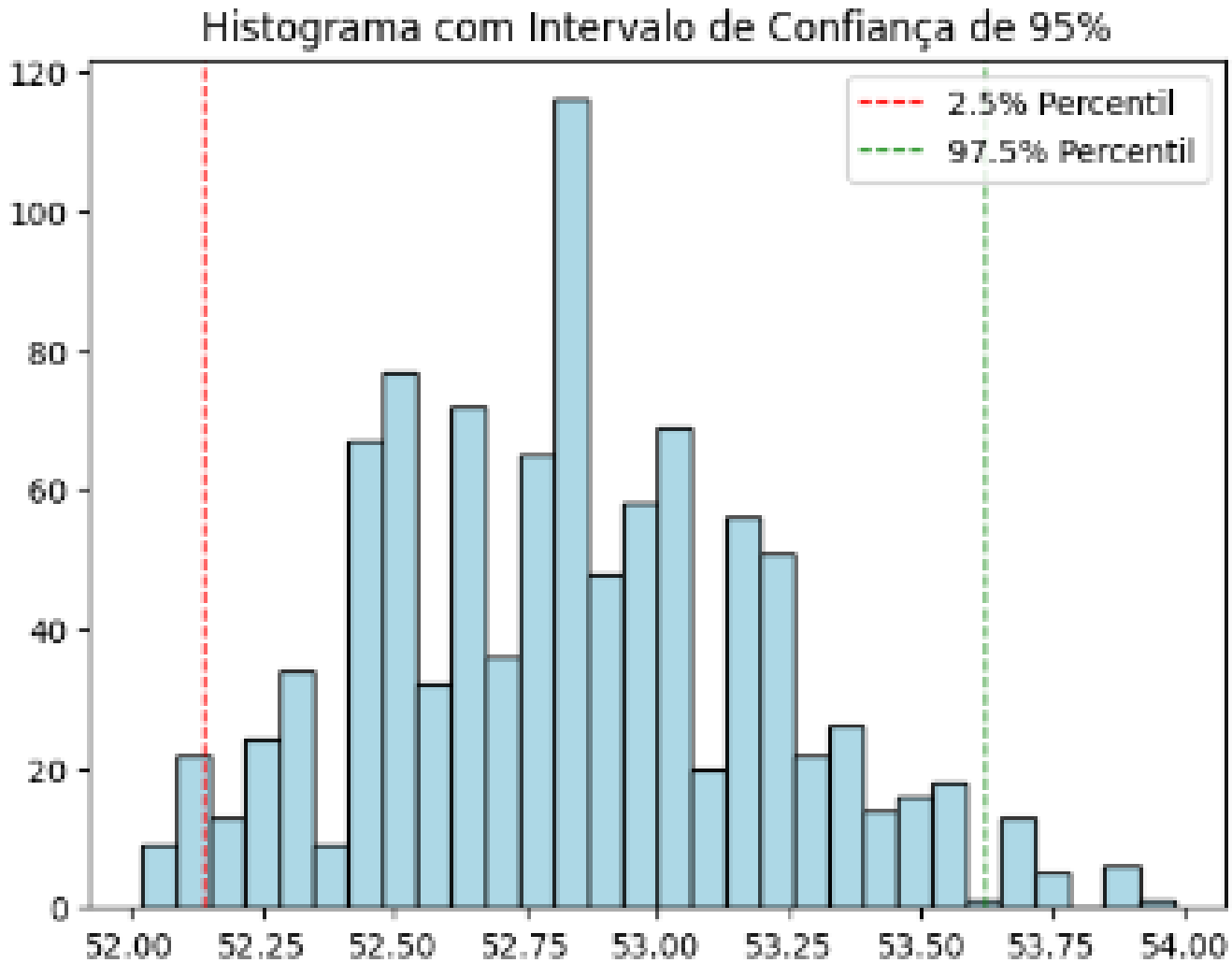
In [88]:
```python
def bootstrap_1sample(column, k):
    mean = []
    for _ in range(k):
        mean.append(np.random.choice(column,len(column)).mean())

    # Calculando o intervalo de confiança de 95%
    lower_percentile = np.percentile(mean, 2.5)
    upper_percentile = np.percentile(mean, 97.5)
    # Criando o histograma
    plt.hist(mean, bins=30, color='lightblue', edgecolor='black')

    # Adicionando linhas verticais para os limites do intervalo de confiança
    plt.axvline(lower_percentile, color='red', linestyle='dashed', linewidth=1, label='2.5% Percentil')
    plt.axvline(upper_percentile, color='green', linestyle='dashed', linewidth=1, label='97.5% Percentil')

    # Adicionando legendas e título
    plt.title("Histograma com Intervalo de Confiança de 95%")
    plt.legend()

    print(f"IC: [{round(lower_percentile,2)}, {round(upper_percentile,2)}]")
```

In [89]:
```python
df = pd.read_csv("peso.csv")
bootstrap_1sample(df.Peso, 1000)
```

```
IC: [52.14, 53.62]
```



In [92]:
```
def bootstrap_2sample(column1, column2, k):
    mean_1 = []
    mean_2 = []
    for _ in range(k):
        mean_1.append(np.random.choice(column1,len(column1)).mean())
        mean_2.append(np.random.choice(column2,len(column2)).mean())

    final_mean = np.array(mean_1) - np.array(mean_2)

    # Calculando o intervalo de confiança de 95%
    lower_percentile = np.percentile(final_mean, 2.5)
    upper_percentile = np.percentile(final_mean, 97.5)
    # Criando o histograma
    plt.hist(final_mean, bins=30, color='lightblue', edgecolor='black')

    # Adicionando linhas verticais para os limites do intervalo de confiança
    plt.axvline(lower_percentile, color='red', linestyle='dashed', linewidth=1, label='2.5% Percentil')
    plt.axvline(upper_percentile, color='green', linestyle='dashed', linewidth=1, label='97.5% Percentil')

    # Adicionando legendas e título
    plt.title("Histograma com Intervalo de Confiança de 95%")
    plt.legend()

    print(f"IC: [{round(lower_percentile,2)}, {round(upper_percentile,2)}]")
```

In [93]:
```
df = pd.read_csv("alturas.csv")
df.drop("Unnamed: 0", axis = 1, inplace = True)
```

In [95]:
```
bootstrap_2sample(df.altura_holanda, df.altura_guatemala, 1000)
```

```
IC: [0.03, 0.12]
```