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Natural Bioactive Polypeptides: A Study towards the Clinical Application in The Bahamas and Trinidad & Tobago

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NATURAL SELECTION

Introduction

Synthetic medication is being overprescribed, resulting in adverse complications linked to major public health issues such as antimicrobial resistance, drug dependency, and the current opioid crisis. According to the United Nations Office on Drugs and Crime, this global burden of overuse of synthetic accounts for the heaviest burden of disease attributable to drug use disorders. In 2015, with almost 12 million disability-adjusted life year (DALYs), or 70% of the global burden of disease attributable to opioid addiction. With suitable alternatives available, peptide-based drugs will help to reduce the global burden, appease the patient preference of naturally derived medication and ensure safer patient usage

Objectives

From the data collected we plan to:

- Determine the consumption and utilisation rate of natural bioactive polypeptides derived from both marine and plant-based organisms.
- Investigate the potential benefits of using natural bioactive polypeptides and create an action plan to address associated public health challenges, from the data collected.
- Formulate formal recommendations to our healthcare institutions to seek and include these natural bioactive polypeptides in their existing formularies as well as develop an educational campaign.

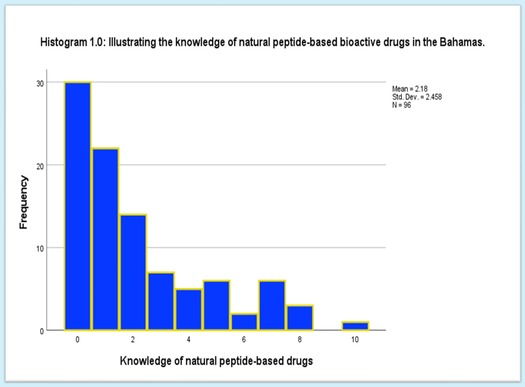
Methodology

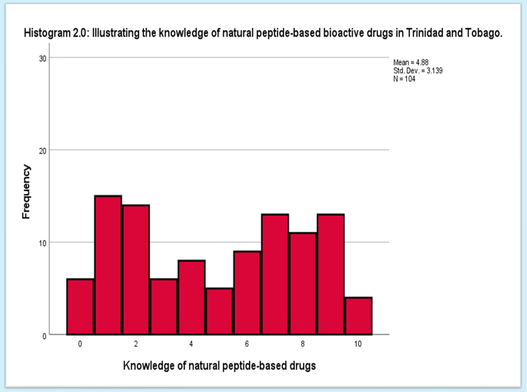
Two hundred questionnaires and ten drug utilization forms were circulated. Both sets of forms were distributed to medical professionals to extract vital information on the demographics, formulary use and ability to share listings of peptide-based drugs derived from natural sources, as well as their quantities. The forms are used to extricate data about awareness, recognition, access and knowledge of peptide-based drugs derived from natural resources and openness to prescribe these alternative medications. From the data collected from these forms, those involved sought to determine statistical trends about the presence of peptide-based drugs within the sample population from medical professionals. Data analysis was executed using IBM SPSS Statistics-27.

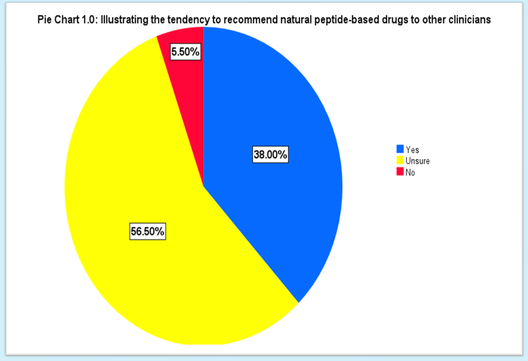
When considering the most effective population for the conducted study, our first and most optimal idea was to reach out to the healthcare systems established within Trinidad and Tobago, as well as physicians, medical practitioners, and pharmacists, as they would most likely have experience not only with the drugs in question but would have the most insight on how the drugs are used and reacted to by the general population.

Once the study progressed, however, our group concluded that we could also utilize similar persons and groups from the Bahamas as part of our population, as we believed their input to also carry some validity and usefulness.

Results







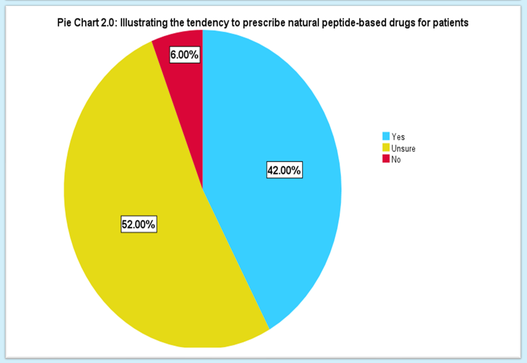
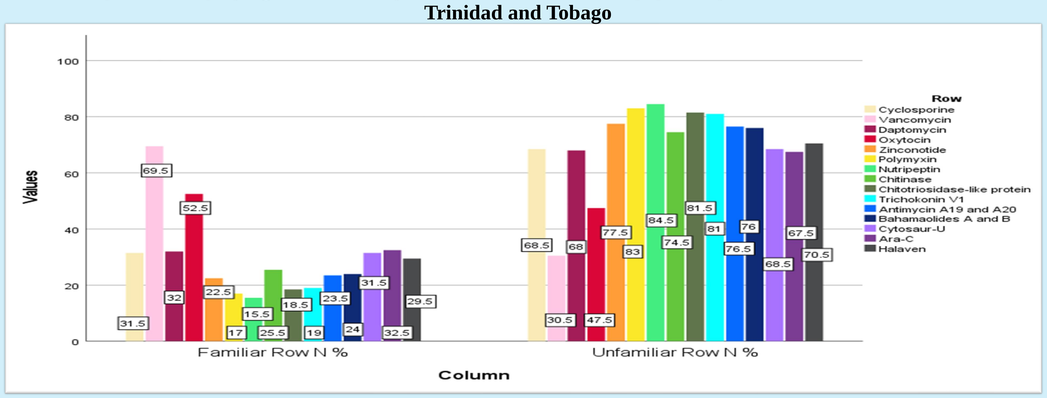


Table 2.B: Evaluating the Levene's and t-tests of the general knowledge on natural peptide-based drugs of the Bahamas and Trinidad & Tobago clinicians.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Knowledge of natural peptide-based drugs	Equal variances assumed	18.423	2.8e-5	-6.754	198	1.57e-10	-2.708	.401	-3.498	-1.917
	Equal variances not assumed			-6.819	192.979	1.57e-10	-2.708	.397	-3.491	-1.924

Bar Graph 1.0: Displaying the familiarity of each natural bioactive peptide by clinicians in The Bahamas and Trinidad and Tobago



Discussion

Based on the information collected, it was observed that majority of the clinicians in the study had a general knowledge of natural peptide-based bioactive drugs. This was indicated by 69% of clinicals scoring ≤5 in clinical knowledge (10 being the highest).

Trinidad and Tobago displayed a greater knowledge base on the topic of medications derived from natural bioactive polypeptides. This can suggest the need for a future study on the disparity between the two countries, as the reason could not be deduced from the data received.

Only a slight percentage (2.5%) of participants displayed a high knowledge of the topic

Despite clinicians of Trinidad and Tobago showing a greater knowledge of medications of natural peptide-based polypeptides, there was no significant difference in the likelihood of prescribing these medications in both countries as from the t-test the P-value (0.814) >0.05, and H_0 (no difference between means) was accepted.

Most clinicians showed familiarity with some drugs, such as antibiotics Vancomycin (73.9%) as it is used to treat colitis and Oxytocin (55.9%) as it is used to induce labour and very little familiarity of anti-cancer and antifungal medication.

At a facility level, according to questionnaires from both The Bahamas and Trinidad and Tobago, all facilities confirmed use of the national formularies. This suggested availability of medications for use in patient care. However, based on a formulary review, only 3.84% of the 638 total drugs available in The Bahamas and 8.11% of the 332 drugs available in Trinidad and Tobago can be classified as natural bioactive polypeptide.

Conclusion

1. Clinicians in both The Bahamas and Trinidad and Tobago have a general foundation on the topic of drugs derived from natural bioactive polypeptides.

2. There is an area of opportunity for further education on the use of natural bioactive polypeptides.

3. There is a sizeable grouping of clinicians with reported limited knowledge of natural bioactive polypeptides in Bahamas and Trinidad and Tobago.

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